
ECONtribute
Discussion Paper No. 017

**Bank Capital and the European Recovery
from the COVID-19 Crisis**

Moritz Schularick

Sascha Steffen

Tobias H. Tröger

July 2020

www.econtribute.de

Bank capital and the European recovery

from the COVID-19 crisis*

Moritz Schularick[†] Sascha Steffen[‡] Tobias H. Tröger[§]

June 2020

Abstract

Do current levels of bank capital in Europe suffice to support a swift recovery from the COVID-19 crisis? Recent research shows that a well-capitalized banking sector is a major factor driving the speed and breadth of recoveries from economic downturns. In particular, loan supply is negatively affected by low levels of capital. We estimate a capital shortfall in European banks of up to 600 billion euro in a severe scenario, and around 143 billion euro in a moderate scenario. We propose a precautionary recapitalization on the European level that puts the European Stability Mechanism (ESM) center stage. This proposal would cut through the sovereign-bank nexus, safeguard financial stability, and position the Eurozone for a quick recovery from the pandemic.

* The views expressed herein are solely the responsibility of the authors and should not be interpreted as reflecting the views of the Federal Reserve Bank of New York or the Board of Governors of the Federal Reserve System. The paper has benefited greatly from the exchanges during Steffen's stay at the Center for Advanced Studies Foundations of Law and Finance at Goethe University, supported by DFG grant FOR 2774. The ECONtribute Excellence Cluster is supported by Deutsche Forschungsgemeinschaft (DFG) under Germany's Excellence Strategy – EXC 2126/1– 39083886.

[†] Federal Reserve Bank of New York, Macrofinance Lab Bonn and ECONtribute Excellence Cluster, moritz.schularick@ny.frb.org

[‡] Frankfurt School of Finance & Management, Center for Financial Intermediaries and the Real Economy (FIRE), S.Steffen@fs.de

[§] Goethe University Frankfurt and Leibniz Institute for Financial Research Sustainable Architecture for Finance in Europe (LIF SAFE), troeger@lawfin.uni-frankfurt.de

1. Introduction

The European economy is slowly emerging from the standstill brought on by the COVID-19 pandemic. The economic damage is substantial, and the level of uncertainty about the recovery path remains high. Continuing social distancing will weigh on consumer spending until a vaccine or treatment eventually arrives. Until then, the likelihood of a second (and maybe third) wave of infections that might force a return to another costly lockdown is non-trivial. The projections are dire: the International Monetary Fund (IMF) forecasts the worst recession in Europe since the 1930s.

Banks need sufficient capital not only to deal with the loan losses coming from the deep recession but also to support the recovery. A well-capitalized banking sector is crucial for a swift economic recovery from the COVID crisis. Recent research demonstrates that on a macro level, the speed of economic recovery depends on the capitalization of the banking sector (Jordà et al. 2020). Insufficiently capitalized banks slow down economic recoveries from recessions, mainly because undercapitalization negatively affects loan supply, leading to a much slower recovery of debt-financed growth. This macro evidence has been complemented on the micro side by recent work by Acharya et al. (2020), which studies the lending behavior of individual European banks after the 2008 financial crisis. The paper's main finding is that insufficient levels of bank capitalization have contributed to Europe's sluggish economic performance in the decade following the financial crisis compared to the US response.

In this paper, we ask whether a similar scenario threatens to derail the European recovery from the COVID-19 crisis. The question is all the more pressing as reforms to the regulatory framework after the global financial crisis (GFC) have generally tightened capital requirements for banks. These reforms should amplify the negative effect of low levels of capital on bank lending because banks have no free funds to hold against new loans. Against this background, we ask whether current levels of bank capital in Europe are sufficient to support a swift recovery from the economic downturn. We find that this is not the case. We estimate a capital shortfall of up to 600 billion (bn) euros, depending on the duration of the crisis and the amount of government assistance to the corporate sector going forward.

We rely on three different approaches that yield a range of estimates for the capital needs of European banks. We begin with a calculation of the book capital shortfall. We assume that a minimum safe ratio of book capital to assets is 4%; a more stringent scenario that accounts for the remaining uncertainties of the COVID-19 pandemic would set this ratio at 7%. Haldane (2012) reports that a 4% capital ratio (7% for the largest financial institutions) would have been

necessary to guard against bank failure during the 2007–2009 global financial crisis. This exercise yields a capital shortfall of up to 290 bn euros. Using the market valuation of bank capital, the capital needs to grow even more substantially as European banks trade at a significant discount to book value. A safe level of bank capital at market valuation would imply capital needs of 540 bn euros. Finally, we also take an SRISK perspective (Brownlees and Engle 2017) to calculate the capital shortfall of banks conditional on a severe market decline as a function of their size, leverage, and risk. These calculations also indicate capital shortfalls of 500 bn euros and more.

Within the Single Supervisory Mechanism, the European Central Bank (ECB) as the prudential supervisor of the Eurozone's largest banks can immediately stop the distribution of capital (through dividends and share repurchases), which would otherwise be paid out to shareholders. However, we are skeptical that preventing capital distributions alone will lead to a meaningful improvement of the capital position of European banks in the current environment. Similarly, allowing banks to release the countercyclical capital buffers will not have a meaningful impact, as banks could be hesitant to follow through. A reduction in (regulatory) capital ratios could lead to ratings downgrades and a reaction from (short-term) market investors that would impede access to funding. These considerations also apply to the COVID-19 revisions to the Capital Requirement Regulation (CRR) currently promulgated by European co-legislators (European Parliament 2020), which will grant capital relief for European banks to spur lending. However, after a successful recapitalization, these market forces are no longer a binding constraint as the recapitalization will increase the franchise value of the banking sector at large. In other words, the recapitalization will improve the market access to capital and allow banks to use their buffers.

Importantly, we argue that a recapitalization is preferable to the creation of a European bad bank, although the two approaches can be complementary. The recognition of bad loans and their transfer to a European bad bank does not solve the undercapitalization problem. It forces banks to recognize the losses, but capital is still needed. In addition, the bad bank solution faces the challenge of valuing a heterogeneous pool of company-specific assets that are spread over different industries, regions, and countries. It is not clear how COVID-related impairments and legacy loans can easily be distinguished. Lastly, a state-run bad bank could pose substantial governance and political economy and forbearance risks.

Having established a plausible range for the capital shortfall of European banks, we ask what can be done about it. Ideally, banks would quickly raise substantial capital in markets. Yet the probability that this flow of capital turns out to be insufficient or too slow is substantial. We therefore propose a precautionary recapitalization of the European banking sector,

coordinated at the European level. Implementation at the European level is necessary to avoid reentering the sovereign-bank doom loop that haunted Europe in the last crisis. This doom loop could reemerge if the costs of the recapitalization would have to be borne by individual countries with high legacy public debt ratios. Countries with high public debt ratios would likely deliberately stall such measures, thereby imposing negative effects on the rest of the Union. At the same time, a European perspective opens opportunities for a restructuring of the European banking system that could emerge leaner and more competitive from the pandemic. The goal of recapitalization is not to perpetuate an unconsolidated and unprofitable European banking system. The pandemic provides an opportunity to untie the close links between banks and their home states to create an integrated European banking market.

We also discuss where the substantial financial resources that are needed for the recapitalization could come from. Our proposal builds on the financial resources of the European Stability Mechanism (ESM). The ESM is a legacy institution of the Eurozone sovereign debt crisis, but the institution could be reformed to become a viable backstop for the European banking system. Its use in the COVID pandemic has met with some resistance. However, its resources could be used to fund the precautionary recapitalization. For that reason, instead of abandoning the capacity of the ESM to directly recapitalize banks in the ongoing reform of this intergovernmental institution, these tools should become central to achieving the goal of a pan-European backstop for the banking sector.

2. Capital and recovery from the economic shock

The COVID-19 pandemic had an immediate impact on the global economy as governments have undertaken drastic lockdown steps to contain the spread of the virus. The resulting economic standstill has adversely affected the corporate sector, as firms' cash flows in the near term are anticipated to drop substantially, while other fixed costs (including servicing debt and paying workers and rents) — operating and financial leverage — remain sticky. In particular, firms in industries such as retail, hotel, and travel have experienced an immediate drop in cash flows and thus have an unusually high demand for liquidity during the economic shutdown. However, other firms also appeared to be scrambling for liquidity because of the high uncertainty as to when and how much economic activity might recover.

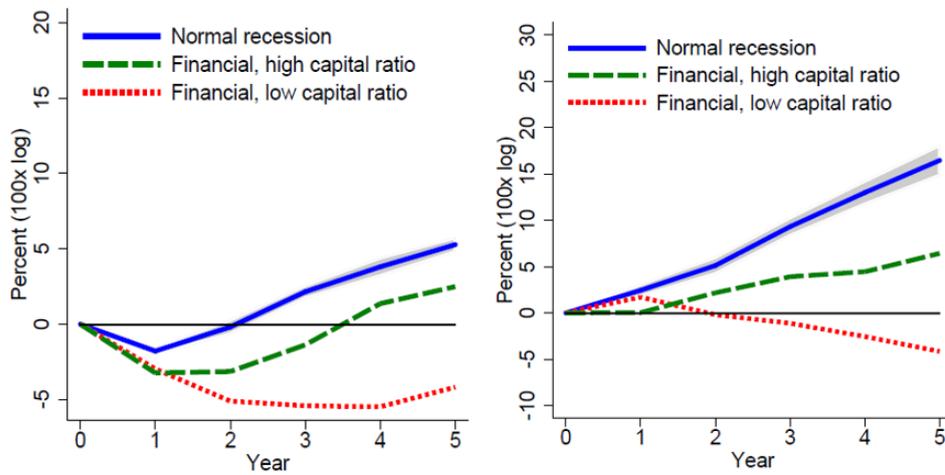
Central banks globally have reacted with substantial liquidity provisions and asset purchases. Governments created short-term liquidity support programs as a lifeline for struggling firms.

The impact of the crisis, however, was asymmetric within the Eurozone, with some countries hit harder than others. While Germany, for instance, experienced a smaller number of infections and fatalities, other countries — Italy, Spain, and France, for example — suffered substantially more, which translated into more draconian and longer lockdowns. Fiscal capacity, however, also varies substantially across the Eurozone, and thus the leeway to respond to this pandemic with government support also differs significantly. The proposed European Recovery Fund mitigates these asymmetries, but much will depend on the implementation of the plan.

The banking sector will be key in the recovery from the crisis. Government support will eventually wear off, and the recovery requires funding from the banking sector across Europe. An important role of banks is to provide liquidity for the real economy. While non-bank financial institutions (collateralized loan obligations, hedge funds, private debt funds) took over an increasing share of corporate financing over the past years, particularly of highly leveraged firms (so-called term loan funding), banks are still the main providers of credit lines in Europe. They are committed to providing liquidity for all firms, including those rated investment grade and non-investment grade, and for unrated firms at predetermined conditions.

A key lesson from the GFC was that banks must raise capital early to support the recovery. Recent research by Jordà et al. (2020) confirms the importance of capitalization levels for the recovery from large economic shocks. Figure 1 shows that economies with a weakly capitalized banking system take considerably longer to regain previous output levels. The right panel speaks to a likely channel for the observed differences: bank lending takes considerably longer to recover when initial capital ratios are low.

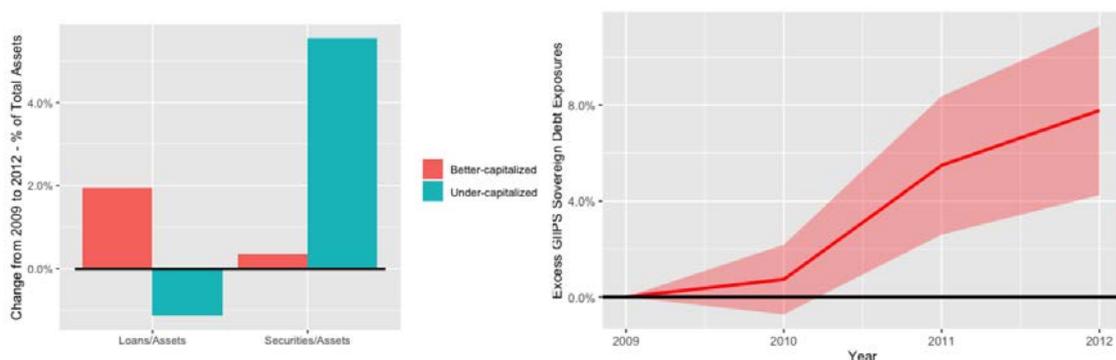
Figure 1



Source: Jordà et al. (2020).

A closely related paper by Acharya et al. (2020) studies the consequences of the undercapitalization of European banks after the GFC. In particular, the paper looks at the effects of regulatory forbearance and guarantees as an alternative to recapitalization. Fiscally constrained governments in Europe often opted for such form of support for the banking sector. The economic costs were substantial, as Figure 2 demonstrates. Weakly capitalized banks loaded up on securities and especially on government debt. Importantly, shrinking their corporate loan books banks did not support the recovery of private investment and became a drag on the recovery.

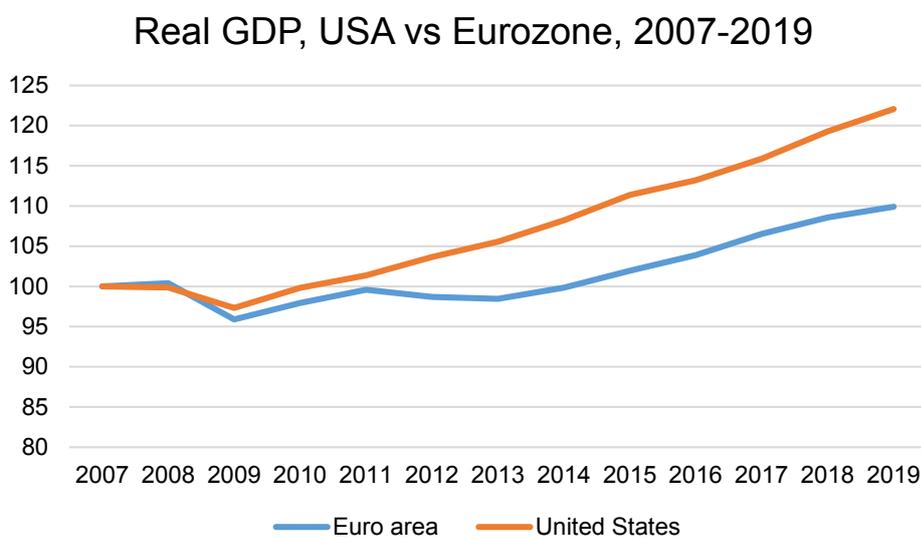
Figure 2



Source: Acharya et al. (2020).

From an international perspective, this drag originating from a weak financial sector arguably contributed to the underperformance of the European economy relative to the other G3 economies after 2008. Figure 3 demonstrates the ailing and incomplete recovery of the European economy after the GFC. Since the crisis, the Eurozone economy underperformed relative to the US economy by about 10%. For a rapid recovery from the COVID-19 economic shock, Europe needs a well-capitalized banking system. Yet the IMF in its Global Financial Stability report highlights once more the banking and sovereign sectors as key vulnerabilities in the Eurozone.

Figure 3



Source: World Economic Outlook.

Recent reforms on the G20/FSB level (Basel III and IV Accords and related reforms) aimed at enhancing the resilience of the banking sector by tightening regulatory capital requirements. However, these reforms potentially amplify the negative effect of low levels of capital on growth. Although the size of the effect is debated, tighter requirements could further constrain the latitude for banks to extend their loan books in a recovery (banks have to hold regulatory capital against the risk-weighted value of any new loan). On the other hand, even the revised framework still favors investments in sovereign debt, which is — by and large — treated as a risk-free asset for regulatory purposes (Kirschenmann et al., 2020).

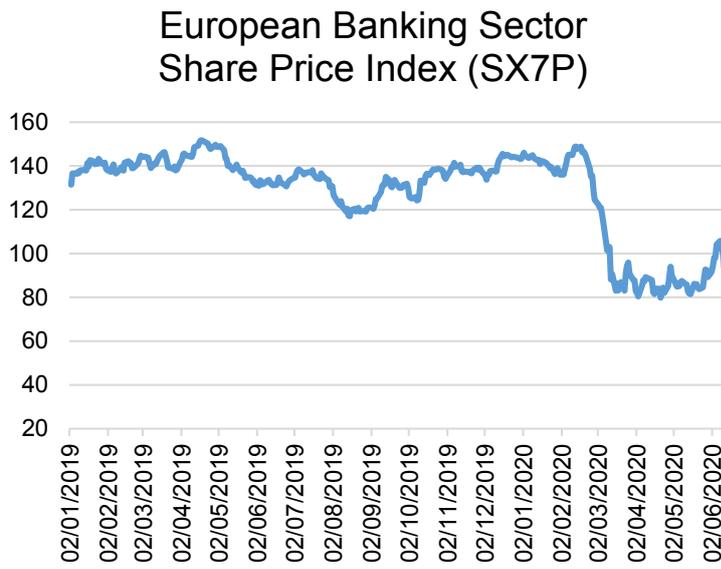
3. The situation of the European banking sector

This crisis is different in comparison to the 2008–2009 GFC. Importantly, the COVID-19 shock did not originate in an overleveraged banking system or in an overleveraged household sector. The financial sector is, however, caught in the crosscurrents of this crisis, as it has to provide the economy with necessary liquidity while simultaneously withstanding a potential surge in loan losses as described above.

In the first months of 2020, European banks lost about 40% of their market value, as Figure 4 shows. Most European banks are trading at about half of their book value, owing to impaired balance sheets and low profitability, as Figure 5 demonstrates. While supervisors have provided some capital relief, there is a clear possibility that the largest European banks might need more capital. In addition to postponing any dividend payout and share repurchases, European banks should be asked to raise capital now.

Loan loss reserves across European banks are low. US banks have already recorded substantial loan loss provisions at the end of the first quarter of 2020. European banks' loss reserves are tiny in comparison. The longer the current economic crisis lasts, the higher the pressure on their balance sheets will become. Eurozone banks are far behind. Bringing their provisions to levels similar to those during the GFC requires a significant amount of capital. Europe entered the COVID crisis with a weakly capitalized banking sector. Without additional capital, it might not be up to the task in supporting a strong recovery. In combination with fiscally weak governments, the banking sector could turn into a macroeconomic headwind.

Figure 4



Source: Bloomberg.

Figure 5



Source: Bloomberg.

US banks witnessed a large drawdown from credit lines during the first three weeks of the crisis (Acharya and Steffen, 2020), particularly from BBB firms and those rated non-investment grade. After recent policy interventions by the Federal Reserve, capital markets opened up and drawdowns substantially decelerated. While as of now, we have less evidence for European markets at the beginning of the COVID-19 crisis, we know that firms' drawdown behavior is very sensitive to overall stock market performance (Berg et al., 2017). Moreover, alternative borrowing from capital markets is not open to all companies. That is, when borrowing conditions in loan markets become more adverse, we will likely see an acceleration in the drawdown from (particularly risky) firms, and banks will become even more important as liquidity insurers for these firms.

In addition to credit line drawdowns, firms increasingly issue new credit lines or amend existing ones to ensure future liquidity. While this does not require bank funding right away, economically, banks pledge future capital for these firms, which might eventually limit their ability to support other parts of the economy — particularly if firms draw down simultaneously as they did early on in the crisis — let alone their ability to provide credit to support the recovery after the crisis. Finally, government support was meant to provide short-term liquidity for firms to survive the lockdown and avoid a surge in insolvencies, but it was not meant to finance (pre-crisis) unviable business models of some firms. Therefore, increased loan losses are imminent despite government support for the corporate sector.

After the GFC and the sovereign debt crisis, new regulation was put in place to increase financial sector stability. Yet at the European level, fundamental projects such as the Banking Union and Capital Markets Union have been initiated but remain unfinished. In particular, although common supervision and resolution have been institutionalized, a common backstop for European banks is still missing.

The disparity between regulatory or book capitalization and market capitalization within European banks has likely never been wider. But the latter eventually determines a bank's viability, its ability to raise capital and funding on its own — without the support of central banks — and eventually its ability to support the recovery of the real economy. Therefore, the potential financial stability implications of COVID-19 must be addressed proactively and decisively, and a recapitalization of the banking sector of the Eurozone might be inevitable.

4. How big is the capital shortfall of the European banking system?

We take the following approach to determine a plausible range for the potential capital shortfall of European banks. In a previous note (Schularick and Steffen 2020), we proposed 200 bn euro. Our proposal foresaw a tripling of the ESM money currently available for bank recapitalization. This amount corresponds to about 20% of tangible equity and about 50% of the current market capitalization of Eurozone banks and thus could absorb substantial losses. Here we go beyond these initial estimates and provide potential capital shortfalls in future potential stress scenarios.

Stress Test Sample

We use a sample of 79 Eurozone banks that took part in the 2019 transparency exercise by the European Banking Authority (EBA) for which we have balance sheet data. Of these banks, 42 are publicly listed. We obtain balance sheet information from SNL Financial data and use data as of December 2019.

Table 1 shows that the banks in our stress tests have €22 trillion in total assets. Table 1 also provides an overview of all banks at the country level, showing mean regulatory capital ratios and bank characteristics. The risk-weighted assets among European banks display substantial cross-sectional heterogeneity, ranging from 21.3% of total assets (Germany) to more than 67% (Ireland). Further, the average market-to-book ratio of 0.8 suggests that the market is heavily discounting banks' assets portfolios (Table 2), at least in part because of the relatively high risk of some of the "riskless" assets relative to the markdowns taken by banks on these assets against their book equity values.

Table 1. Descriptives (all 79 banks), euro (millions), averages are unweighted means

Country	Assets	Book Equity	Tier 1 ratio	RWA / TA	ROAA	Number Banks
France	7,505,577	348,058	19.2%	27.8%	0.4%	8
Germany	3,553,805	190,713	31.5%	21.3%	0.3%	14
Spain	3,344,724	239,414	14.2%	41.2%	0.4%	10
Italy	2,343,563	168,726	14.5%	43.0%	0.4%	9
Netherlands	2,166,131	127,598	16.8%	33.7%	0.2%	6
Finland	671,462	40,831	18.6%	35.7%	0.5%	3
Belgium	612,290	39,399	20.0%	27.9%	0.2%	4
Austria	483,137	41,826	18.9%	45.4%	0.4%	5
Greece	253,698	28,194	15.3%	52.9%	0.7%	4
Ireland	230,445	24,663	16.2%	67.8%	0.1%	2
Portugal	204,522	19,071	14.7%	53.8%	0.6%	4
Luxembourg	76,004	6,143	17.7%	35.1%	0.4%	2
Cyprus	21,013	1,601	19.5%	37.4%	0.5%	2
Slovenia	17,997	2,310	21.8%	38.7%	0.6%	2
Malta	12,331	1,062	19.9%	59.7%	1.6%	1
Latvia	3,743	341	18.8%	47.6%	1.1%	1
Estonia	3,032	206	13.9%	44.4%	1.1%	1
Lithuania	2,508	311	15.0%	65.9%	2.2%	1
Total	21,505,981	1,280,467	18.1%	43.3%	0.6%	79

Source: SNL Financial

Table 2. Descriptives (42 publicly listed banks), euro (millions), averages are unweighted means

Country	Assets	Book Equity	Market Value (MV)	MV /Assets	MTB	Number Banks
France	5,288,659	251,258	129,339	2.42%	0.6	3
Spain	3,018,940	215,595	126,123	4.07%	0.6	7
Italy	2,343,563	168,726	90,951	3.79%	0.5	9
Germany	1,859,269	98,924	24,969	2.69%	0.5	4
Netherlands	1,266,798	76,133	56,885	4.44%	0.8	2
Finland	554,848	31,528	29,221	5.29%	0.9	1
Austria	443,554	38,071	24,625	6.21%	0.9	3
Belgium	290,735	20,365	27,921	9.36%	1.5	1
Greece	253,698	28,194	10,445	4.38%	0.4	4
Ireland	230,445	24,663	13,674	6.61%	0.6	2
Portugal	81,643	7,381	3,065	3.96%	0.5	1
Cyprus	16,308	1,077	346	2.22%	0.3	1
Slovenia	14,174	1,731	1,240	9.06%	0.7	1
Malta	12,331	1,062	619	5.21%	0.6	1
Estonia	3,032	206	341	10.78%	1.7	1
Lithuania	2,508	311	304	12.15%	1.0	1
Total	15,680,505	965,224	540,068	5.79%	0.8	42

Source: SNL Financial

Stressed Capital Shortfall Measures

To account for potential losses in future stress scenarios, we employ three stressed capital shortfall measures, as in, for example, Acharya and Steffen (2014). The first two measures raise the level of capital requirements, and the remaining measure (also) accounts for losses in a stress scenario.

Book Capital Shortfall: Using book values of equity and assets, the less stringent benchmark is a leverage ratio (book equity/assets) of 4%, and the more stringent benchmark is a 7% leverage ratio. Haldane (2012) reports that a 4% capital ratio (7% for the largest financial institutions) would have been necessary to guard against bank failure during the global financial crisis of 2007–2009.

Market Capital Shortfall: Similarly, using the market value of equity and assets, the less stringent benchmark is a leverage ratio (market equity/assets) of 4%, and the more stringent benchmark is a 7% leverage ratio.

SRISK or Capital Shortfall in a Systemic Crisis: We assume a systemic financial crisis with a global stock market decline of 40%. SRISK 5.5% VLAB is our measure for a bank's capital shortfall in this scenario, assuming a 5.5% prudential capital ratio with losses estimated using the VLAB methodology to estimate the downside risk of bank stock returns.* While this scenario and the resulting SRISK measure use market data and market equity (instead of book equity) in determining leverage, the approach is conceptually similar to that of the EU stress tests, which is to estimate losses in a stress scenario and determine the capital shortfall between a prudential capital requirement and the remaining equity after losses.

* This capital shortfall measure has been implemented based on Acharya et al. (2012) and Brownlees and Engle (2013){2017?}. The data are provided by New York University's VLAB (<http://vlab.stern.nyu.edu/welcome/risk/>). The theoretical motivation for the measure can be found in Acharya et al. (2010){2012?}. SRISK has been documented as a comprehensive measure that includes losses arising from both a bank's investments in assets and its exposure to fragile liabilities, which in the current European context relate, respectively, to holdings of peripheral sovereign bonds and (short-term) funding risk.

Table 3. Book capital shortfall

Country	Assets	Equity	Shortfall (4% Equity/Assets)	Shortfall (7% Equity/Assets)	Number Banks
France	7,505,577	348,058	19,989	178,969	8
Germany	3,553,805	190,713	251	64,300	14
Spain	3,344,724	239,414	0	6,817	10
Italy	2,343,563	168,726	0	2,576	9
Netherlands	2,166,131	127,598	3,153	24,036	6
Finland	671,462	40,831	0	7,311	3
Belgium	612,290	39,399	0	3,475	4
Austria	483,137	41,826	0	0	5
Greece	253,698	28,194	0	0	4
Ireland	230,445	24,663	0	0	2
Portugal	204,522	19,071	0	0	4
Luxembourg	76,004	6,143	0	241	2
Cyprus	21,013	1,601	0	65	2
Slovenia	17,997	2,310	0	0	2
Malta	12,331	1,062	0	0	1
Latvia	3,743	341	0	0	1
Estonia	3,032	206	0	6	1
Lithuania	2,508	311	0	0	1
Total	21,505,981	1,280,467	23,394	287,796	79

Source: SNL Financial, own calculations.

The book capital shortfall estimates indicate a capital shortfall for all banks of between €23 bn (4% benchmark capital ratio) and €287 bn (7% capital ratio), as shown in Table 3.

Table 4. Market capital shortfall

Country	Assets	Market Value	Shortfall (4% MV/Assets)	Shortfall (7% MV/Assets)	Number Banks
France	5,288,659	129,339	77,331	232,333	3
Spain	3,018,940	126,123	4,022	78,939	7
Italy	2,343,563	90,951	13,557	70,221	9
Germany	1,859,269	24,969	46,651	100,003	4
Netherlands	1,266,798	56,885	0	30,443	2
Finland	554,848	29,221	0	9,457	1
Austria	443,554	24,625	0	5,875	3
Belgium	290,735	27,921	0	0	1
Greece	253,698	10,445	885	6,071	4
Ireland	230,445	13,674	0	3,626	2
Portugal	81,643	3,065	28	2,348	1
Cyprus	16,308	346	277	744	1
Slovenia	14,174	1,240	0	0	1
Malta	12,331	619	0	213	1
Estonia	3,032	341	0	0	1
Lithuania	2,508	304	0	0	1
Total	15,680,505	540,068	142,750	540,274	42

Source: SNL Financial, own calculations.

The market capital shortfall estimates indicate a capital shortfall of €143 bn (4% benchmark capital ratio) or €540 bn (7% capital ratio) for the 42 publicly listed banks (Table 4), which is

similar in size to the current capitalization of all publicly listed banks. Estimates of SRISK or the capital shortfall in a systemic financial crisis (40% market decline over a six-month period) is €581 bn (Table 4) as of December 2019; 41% is due to downside correlation with the market, and 59% is due to the leverage of these institutions (Table 5).

Table 5. SRISK publicly listed European Stress Test Banks (31 banks)

Country	SRISK (31Dec2019)
France	234,115
Germany	95,107
Spain	94,964
Italy	75,280
Netherlands	40,988
Finland	16,264
Austria	10,480
Greece	5,700
Ireland	5,670
Portugal	2,209
Belgium	13
Total	580,790

Source: VLAB, NYU.

Market versus book value of capital. While current bank regulation usually relies on book capital ratios (e.g., the Tier 1 capital ratio), they do not correctly reflect the situation of a bank as they are necessarily backward looking. A market value is a forward-looking measure and can be thought of as the present value of future cash flows discounted at a risk-adjusted interest rate (which reflects the risk of the bank). The cash flows account for losses of assets on the balance sheet of the bank, monetary policy (e.g., low or negative interest rates), profitability concerns over competition the banking sector faces (e.g. Fintech), and cash flows from prospective business opportunities. It reflects the franchise value of a bank as a going concern. That is, if the book capital of a bank is worth €50 bn, but the market value is €15 bn, then the bank can raise only up to €15 bn as this is the price at which the equity stake of the bank can be sold. Investors will thus rely on market rather than book values. † Using market values to estimate potential capital shortfalls of European banks, we identify an aggregate capital shortfall of up to €600 bn.

† We do not report results based on (stressed) regulatory capital ratios such as a Tier 1 capital ratio, as these ratios rely on a risk weighting of banks' assets. Previous academic studies have shown that shortfalls based on these ratios are uncorrelated or even negatively correlated with capital shortfalls based on losses incurred in stress scenarios in the official EBA stress tests when applying a book or market capital ratio (e.g., Acharya and Steffen, 2014).

5. Recapitalization and restructuring of the European banking sector

All these scenarios show European banks experiencing a substantial capital shortfall. Even if current capitalization levels were sufficient to weather the COVID-19 recession, thanks to substantial government support for the business and household sector, the writing is on the wall: for the foreseeable future, the European banking system will remain weakly capitalized and is likely to become a potential drag on the recovery. As in the post-2008 era, Europe risks falling behind other economies. In the worst-case scenario of a return of the virus in a second wave of mass infections, current capitalization levels will more immediately be tested. Against this difficult background, we propose a new approach to European banking sector recapitalization and restructuring. Our main tenet is that there is much to be gained from a precautionary recapitalization of the European banking system and the creation of an integrated European banking market. The following principles should apply:

1. Recapitalization should be done on the European level to escape the sovereign-banking doom loop. Recall that it was exactly for this reason that establishing a common European backstop for the financial sector was the original rationale underpinning the banking union project, with common supervision and resolution only safeguarding incentive alignment (Tröger 2014). This means that significant resources will have to be mobilized on the European level. Our proposal rests on tapping the unused resources of the ESM for this purpose. Once again, this institutional arrangement is not entirely new to the European regulatory framework: although the direct bank recapitalization tool was never operationalized as an ESM instrument, it was envisioned — at least by the ESM’s board of governors — to serve as a pan-European backstop to ward off systemic crises in which the fiscal capacity of individual member states proved insufficient (ESM 2014). In fact, in the COVID-19 crisis, a European solution that does not go on the tab of the individual governments is essential.

2. Recapitalization must be done for all major banks to avoid free riding and stigma. Therefore, it needs to be designed in a resolution-remote manner; that is, receiving ESM funds does not require a “failing or likely to fail (FOLF)” assessment of individual institutions, as enshrined in the EU resolution framework (see BRRD, art. 32(1)(a)). Instead, the recapitalization fund could acquire stakes in the largest banks of all countries — even some healthy ones — to avoid coordination and signaling problems (i.e., a stigma for the weaker ones) and to avoid contagion (Philippon and Schnabl, 2013). The closest equivalent to such an injection of government funds into ailing banks outside of resolution is the precautionary

recapitalization under BRRD, art. 32(4)(d). This instrument was arguably envisioned by European legislators to fend off systemic crises where creditor loss participation through a bail-in would prove counterproductive (Tröger 2018). Our proposal takes the rationale one step further and allows for supranational precautionary recapitalizations as a consequence of the ESM's new role as a pan-European backstop for Eurozone banks. The present crisis might also present an opportunity to remedy the structural shortcomings of the European banking sector and unleash the economic potential of a reorganization and European integration of financial institutions. The precautionary recapitalization could support this necessary consolidation process. As a matter of fact, we do not claim that the precautionary recapitalization we propose here will at any rate suffice to restore a strong and prosperous European banking sector. Yet, whatever restructuring efforts are needed in addition, their success also hinges pivotally on adequate capital injections.

3. The trigger for the reorganization could be loss recognition. The actual losses incurred in the COVID-19 crisis have to be promptly recognized and diligently provisioned for. This goal could be achieved if supervisors strictly enforce IFRS 9 on expected credit losses, which can be done without imperiling financial stability only once a credible public safety net to satisfy recapitalization needs is established on the European level. The ECB's current forbearing stance in this regard (ECB 2020) in fact seems motivated by the current lack of such a backstop; putting the European banking system on the brink in such an environment by rigidly enforcing accounting and prudential standards would, of course, do more harm than good. In our proposal, financial stability would be preserved despite a strict supervisory stance. The recapitalization fund purchases preferred stocks and warrants and sets an (accelerating) dividend that will compensate the taxpayer for the risks taken. Other (non-equity) capital instruments — even if they count as regulatory capital — are effectively debt instruments and thus rather worsen the possible debt overhang of an undercapitalized bank. To achieve a viable recapitalization, these hybrid capital instruments are therefore inferior to full-fledged equity capital such as preferred stocks and warrants. The ESM might have some influence on the governance of the bank. The ESM should, however, exercise restraint in imposing restrictions and refrain from second-guessing the business judgement of bank managers.

4. If the funds from the bailout scheme are not required, banks can choose to repay them, and restrictions will be lifted. Banks should be required to pass a stress test administered by the ECB and EBA in coordination with the European Systemic Risk Board when they request to repay.

Such a precautionary direct recapitalization is superior to setting up a pan-European bad bank, although the two approaches can be complementary. A bad bank model faces several

obstacles that likely make it a second-best solution. First, it doesn't solve the problem of capital shortfall in itself; instead, it only leads to loss recognition. From a macroeconomic perspective, the goal should be to establish a well-functioning (i.e., properly capitalized) banking system. To achieve this aim, capital needs to be injected. Second, the valuation of company-specific assets is problematic because the loans are spread over different industries. Other than after, say, real estate booms, there is no clearly demarcated pool of troubled assets. Third, the distinction between COVID-related impairments and legacy loans is hard to make. Lastly, a state-run bad bank could come with substantial political economy risks. Once loans are publicly owned, bankruptcy and resolution are likely to become more complicated.

6. Why ESM funding?

In light of the asymmetry of weak banks and fiscally constrained governments across Europe, we must have a pan-European solution to address financial stability concerns. The market must not doubt the willingness and ability of the ECB, other Eurozone institutions, and governments (even the fiscally weak ones) to safeguard financial stability. The crisis response needs to avoid another doom loop between weak sovereigns and weak banks. The dithering response to this doom loop was probably the single most important factor explaining why Europe as a whole was less successful than the US in fighting and recovering from the 2008 crisis.

The only European institution with substantial financial firepower is the ESM. For various reasons, the ESM facilities are viewed with a critical eye in some member states and are unlikely to be used. The European Recovery Fund has superseded the ESM as a crisis-fighting tool, freeing up these financial resources. We therefore float the idea of redirecting these resources to build a strong and integrated European banking system. The ESM is, however, an intergovernmental institution outside the European Union but was always envisioned as becoming an institution within the framework of the founding Treaties. We believe that now could be the right time to make such a bold advance, not least because — significantly more modest — reforms of the ESM are currently under way.

Note also that this proposal is not about banking resolution. In current circumstances, the Single Resolution Mechanism (SRM) should not be the first choice. While it ensures uniform practice in the execution and financing of resolutions, it is unsuitable for large-scale, system-wide recapitalizations as the one envisaged here. Although the Single Resolution Fund (SRF)

also pools contributions from institutions at the national level, it is currently in the middle of its buildup phase (2016–2023) and is scheduled to reach the target level of at least 1% of covered deposits of all credit institutions in three years only. Therefore, the funds that are currently available (about €30 bn) are simply too small to make a dent in the shortfall. Moreover, the ESM backstop for the SRF is not yet operational. Most importantly, the SRF is not designed to satisfy the extensive recapitalization needs of the Eurozone banking system. Instead, under the European bank resolution framework, troubled banks' balance sheets should be restructured by calling on significant private sector loss participation in a bail-in, before (limited) public funds can absorb losses.[‡] These preconditions for injecting public funds risk making a systemic crisis worse and should thus not apply in the current scenario.

7. Conclusions

The balance sheet position of the European banking sector is delicate. European banks are trading at substantial discounts to their book value in markets. A substantial gap exists in particular with respect to US banks. Such weak capitalization levels pose a risk to a quick recovery from the COVID-19 crisis. Evidence from past crises, and in particular from Europe's slow recovery from the 2008 crisis, underlines that weak capitalization slows down recoveries from financial crises and thus decreases social welfare. Europe is well advised to avoid repeating its lackluster post-2008 performance.

In this paper, we make the case for a precautionary recapitalization of European banks. We estimate a substantial capital shortfall across different scenarios, spanning from 60 bn euros to 600 bn euros. Higher capital ratios would not only provide valuable insurance against further economic shocks from a second wave but would also prepare the ground for a quick recovery, supporting the stimulus measures taken by governments. Yet recapitalization is a precondition, not a substitute for the reorganization of the European banking sector whose profitability remains low.

We discuss the principles on which this recapitalization should be built. First, it should be done at the European level to avoid the sovereign-bank doom loop. Second, it should apply to all banks, including healthy ones. Healthy banks would be allowed to repay the money after passing a stringent stress test. Third, the only European institution that is currently in a position

[‡] SRM-Regulation, art. 27(7) requires a minimum bail-in of 8% of the failed bank's total liabilities before the SRF can contribute an amount of up to 5% of the bank's total liabilities to loss absorption and recapitalization.

to provide the necessary funds for the recapitalization is the ESM. Instead of stripping the ESM of its ability to directly recapitalize European banks, this capacity should be strengthened.

References

Acharya, V., R. Engle, and M. Richardson (2012). Capital Shortfall: A New Approach to Ranking and Regulating Systemic Risks, *American Economic Review Papers and Proceedings*, 102(3), 59-64.

Acharya, V., M. Jager, S. Steffen, and L. Steinruecke (2020). Kicking the Can Down the Road: Government Interventions in the European Banking Sector. Working Paper.

Acharya, V., and S. Steffen (2014). Falling Short of Expectations? Stress-Testing the European Banking System.

Acharya, V. and S. Steffen (2020). The Risk of Being a Fallen Angel and the Corporate Dash for Cash in the midst of COVID, *COVID Economics* (10), 44-61.

Berg, Saunders, Streit and Steffen (2017). Mind the Gap: The Difference between US and European Loan Rates, *Review of Financial Studies*, 30 (3), 948–987.

Brownlees, Christian and Robert Engle (2017). SRISK: A Conditional Capital Shortfall Measure of Systemic Risk, *Review of Financial Studies*, 30 (1), 48–79.

European Central Bank (2020). Letter from Andrea Enria to all Significant Institutions “IFRS 9 in the context of the coronavirus (COVID-19) pandemic”. April 1. https://www.bankingsupervision.europa.eu/press/letterstobanks/shared/pdf/2020/ssm.2020_letter_IFRS_9_in_the_context_of_the_coronavirus_COVID-19_pandemic.en.pdf

European Stability Mechanism (2014). ESM direct bank recapitalization instrument adopted (Press release) <https://www.esm.europa.eu/press-releases/esm-direct-bank-recapitalisation-instrument-adopted>

European Parliament (2020). COVID-19: Revised rules to encourage banks to lend to companies and households (Press release). <https://www.europarl.europa.eu/news/en/press-room/20200608IPR80708/covid-19-revised-rules-to-encourage-banks-to-lend-to-companies-and-households>.

Haldane, A. (2012). The Dog and the Frisbee. Bank of England Speech, August 31, 2012

Jorda, O., B. Richter, M. Schularick, and A. Taylor, (2020), Bank Capital Redux, Review of Economic Studies, forthcoming.

Kirschenmann, K., J. Korte, and S. Steffen (2020). The Zero Risk Fallacy - Banks' Sovereign Exposure and Sovereign Risk Spillovers, Journal of Financial Stability, forthcoming.

Philippon, T., and P. Schnabl (2013). Efficient Recapitalizations, Journal of Finance 68(1), 1-42.

Schularick, M. and S. Steffen (2020). A Protective Shield for Europe's Banks, Macrofinance Lab Bonn and Frankfurt School of Finance, Discussion Paper.

Tröger, T. (2014). The Single Supervisory Mechanism – Panacea or Quack Banking Regulation?. European Business Organization Law Review 15: 449-497.

Tröger, T. (2018). To Complex to Work – A Critical Assessment of the Bail-In Tool Under the European Bank Recovery and Resolution Regime. Journal of Financial Regulation 4:35-72.