Author:
STEFANO MIELI
Former Managing Director for Banking Regulation and Supervision, Banca d'Italia, Roma - Italy

IS PRUDENTIAL REGULATION PRUDENT?*

ABSTRACT

The financial system is periodically hit by crises that erode confidence in the effectiveness of countries' regulatory and supervisory regimes.

The historical evolution of banking controls shows there has been a swinging back and forth to a stricter regulatory framework. The Basel Accord on Capital aimed at modernizing the methods of controlling banks while allowing them to behave freely as firms.

After the 2007/2009 crisis, the reliance on market-oriented instruments was strongly reduced. In addition, to minimize fiscal costs, the emphasis switched from bail-out to bail-in. This note argues that bail-in has a potentially dangerous effect on stability. In particular, uninsured depositors have incentives to run. Doubts are also pointed out with regard to the effects of market discipline as well.

In conclusion, *inter alia* suggestions, reassuring depositors by admitting that governments can act as a last guarantor is recommended. To counteract the bankers' moral hazard, supervisors should receive full powers to act to stop risky behavior by banks.

Financial stability is threatened by Too Big To Fail (TBTF) banks, and the size of large banks should be reduced. Also, some limitations of risky activity for banks should be reintroduced worldwide.

Keywords: Financial Crises; Bank Regulation; Bank Run; Basel Accord on Capital; Bail-in; Prudential Regulation; Value at Risk; Too Big to Fail
JEL Classification: G18; G21; H12; H81

* I thank Enzo Croce, Rupert Limentani, Mary Pace, and an anonymous referee for their comments and suggestions on an earlier draft of this paper. The usual disclaimers apply.

RIASSUNTO

La regolazione prudenziale è prudente?

Il sistema finanziario è periodicamente colpito da crisi che scuotono la fiducia nell'efficacia dei sistemi di regolazione e supervisione.

L'evoluzione storica dei controlli sulle banche mostra che vi sono stati avanti e indietro rispetto a una regolamentazione severa.

L'accordo di Basilea sul Capitale intendeva modernizzare i metodi di controllo delle banche, permettendo al contempo di farle comportare liberamente come imprese.

Dopo la crisi del 2007/2008 la fiducia negli strumenti di mercato inizialmente mostrata si è notevolmente ridotta. Inoltre, per minimizzare la spesa pubblica, l'enfasi si è spostata dal salvataggio pubblico al coinvolgimento dei privati, compresi i depositanti non coperti dall'assicurazione sui depositi (*bail-in*). Questa nota sostiene che il *bail-in* ha un potenziale effetto negativo sulla stabilità, fornendo un incentivo alla corsa al ritiro dei depositi. Dubbi sono avanzati anche sugli effetti della disciplina di mercato.

Nelle conclusioni è fra l'altro raccomandato di rassicurare i depositanti, ammettendo l'intervento dei governi, se necessario. Per contenere il rischio di comportamenti eccessivamente rischiosi da parte delle banche, ai supervisori dovrebbero essere dati maggiori poteri.

Le banche molto grandi (Too Big To Fail) sono una minaccia alla stabilità e la loro dimensione dovrebbe essere contenuta. Sarebbe anche opportuno reintrodurre limitazioni delle attività rischiose.

1. INTRODUCTION

Financial crises are very dangerous. During the last century many measures have been put in place to cope with this rather frequent phenomenon, often linked to bank failures.

In the last decades a common effort has been carried out at a global level thanks to the work of the Basel Committee on Banking Supervision (BCBS). The first so-called Basel Accord on Capital was adopted in 1988; in the following years it was revised several times.

The golden rule adopted was to require a capital endowment calibrated to the risk of assets. Also, in the Basel II version, supervisors, in particular situations, could ask banks to get additional amounts of capital, while transparency was expected to exert a beneficial market discipline.

The 2007/2009 crisis was a cold shower for regulators and supervisors, and they felt it was necessary to do more than simply fine-tune the framework. In addition to filling the gaps in the regulation (e.g., in the field of derivatives and complex financial products), the approach remained apparently the same, although the reliance on market-oriented instruments was strongly reduced: internal models were trapped by brutal limits, ratings lost importance, and so on. In addition, to minimize moral hazard and fiscal costs, the emphasis switched from bail-out to bail-in.

Despite that, the risk of other bank failures and financial instability is not driven away, as shown by the 2023 crises in the USA and Switzerland.

This paper intends to discuss the fundamentals of the original Accord and of the main adjustments made later, to answer the question: is the present regulatory framework capable of minimizing the risk of future significant crises?

The note is organized as follows: Section 2 deals with the relevance of financial stability and the role of banks as a source of crises; in Section 3 a short recall of the history of banking regulation in the last century is presented; the evolution is just sketched and the intention is to show how volatile the philosophy of regulation has been over time; Section 4 deals with Value at Risk (VaR) and the decision to use this statistical method in a regulatory framework; in Section 5 the pros and the cons of the last Basel accord are discussed; the rules introduced worldwide after the 2007/2009 crisis (the Great Financial Crisis – GFC), are discussed in Section 6; Section 7 deals with the 2023 crises of American and Swiss banks. In Section 8, some recent proposals to strengthen the regulatory framework are briefly considered. The last Section (number 9) points out some final considerations and suggestions.

DOI: 10.65644/EIIE.078.04.0635

2. Financial stability

It's a matter of fact that the financial sectors of developed countries are very large and very interconnected with the real part of the economy, even if it is difficult to measure the interconnectedness.

According to the majority of economic studies, a modern financial system is beneficial to the economy. For this paper, it is enough to take into account the positive correlation between financial development and economic growth (see, for instance, Goldsmith, 1955), and it is not necessary to enter into the debate on causality, although many economists think that a causal relationship could exist between financial deepening and growth (see Rajan and Zingales, 1996).
This note wishes to focus on the consequences of financial instability. Damages can be huge (there is evidence from developing to developed countries[1]). Great importance is generally attributed to the burden in terms of an increase in tax (the so-called taxpayers' money) or public debt in the case of public intervention, but perhaps the real problem is the impact on the economy. Using as a proxy the estimated loss of potential Gross Domestic Product (GDP), we can have different results, depending on the model we choose. Anyway, many studies of the effects of the GFC in the US find that the impact was very significant, while the public intervention cost had a weight of around a few points of GDP[2]. In recent years, the ratio between public debt and GDP has grown greatly. There are many reasons for the increase of the numerator of this ratio, but we also have to consider the relative shrinking of the denominator.

Some studies also try to assess the cost of regulation in terms of negative impact on growth, but the magnitude estimated is not comparable with the loss of GDP from a crisis such as the GFC[3].

According to many economists, the public sector has the duty of putting in place actions to avoid or reduce the impact of crises. A theoretical way to justify public intervention is the fact that the private sector is often unable to prevent or solve a financial crisis. Financial stability can be viewed as a public good, that is to say, a sort of good which is non-rivalrous and non-excludable in

[1] Caprio and Honohan (1999); Romer and Romer (2017).
[2] According to Barnichon *et al.* (2018) estimates, the GFC persistently lowered the US output by roughly 7 percentage points; see also, Atkinson *et al.* (2013); Kapp and Vega (2014).
[3] Guiso *et al.* (2006) consider positive impacts of regulation, but just in terms of a reduction of bad loans.

consumption. In such cases, there is a market failure, and a public intervention can be necessary[4].

This paper considers only threats to financial stability posed by banks. These financial intermediaries are especially important to the functioning of the economy (just consider the monetary function and the role in the selection of investments to be financed), but are particularly fragile because of the structure of their balance sheet. In particular, their typical assets are exposed to credit risk, and sometimes to market risk, and their liabilities consist largely of sight deposits[5].

To preserve financial stability, the regulation of banks is now generally accepted, even if there are still a few advocates of free banking (Hon Chu, 1996).

3. Highlights of the evolution of bank regulation in the last century

Before 1920, only a few countries tried to deal with the problem of banking crises (Minsky, 1994; Vanatta, 2020; Molteni and Pellegrino, 2024).

The turning point was the 1929 crisis, and it is probably right to say that modern banking regulation was born worldwide in the aftermath of the Great Depression.

At the beginning, regulation was structural. It consisted of a detailed system of rules impeding banks not only from growing too much, but also from entering markets. The golden rule was to avoid excessive competition, which was considered a danger to stability. Lack of competition was considered a price worth paying to avoid crises.

In short, considering the years from around 1940 to the early seventies, it is possible to say that we had a period (more or less coincident with the *trente glorieuses*) of relative stability, but of financial repression [6].

During the following twenty years, the financial world started to change.

[4] Reiss (2021).
[5] For a different opinion on the uniqueness of banks, see Admati and Hellwig (2024).
[6] See De Bonis and Trapanese (2023).

DOI: 10.65644/EIIE.078.04.0635

With the end of Bretton Woods and the impact of floating currencies, banks had to face new risks. The bankruptcy of German Bank Herstatt probably was the *casus belli* for the establishment in 1974 of a Committee at the international level, the Basel Committee on Banking Supervision (BCBS).

It took a long time for the Committee to propose a framework to regulate banks. In the meantime, a wave of deregulation pervaded many fields of the economy.

In the last decades, relevant improvements in the theory of finance created new opportunities for financial intermediaries, and new techniques to deal with financial risks have been introduced.

An important one was an application named RiskMetrics™[7] and other approaches based on the so-called Value at Risk (VaR).

It's worth spending some time on this point, because the new approaches to regulation were influenced by those tools.

4. Value at Risk and prudential regulation

Value at Risk (VaR) is a statistical method to estimate the potential maximum loss of a financial portfolio over a specific time frame (usually one day), given a specified degree of confidence (often, 95 percent – 2 standard deviations from the mean – or 99.7 percent – 3 standard deviations)[8].

There are many models, more or less sophisticated, to measure VaR: the simplest ones are easier to deal with, but less reliable. It is worth keeping in mind that all of them work out just an estimation of the market risk, not the unknown risk. The same notion of risk (not only financial risk) is controversial[9].

[7] RiskMetrics™ is a set of statistical tools to estimate the exposure of a financial portfolio to market risk. It was introduced by J.P. Morgan to enable the top managers to keep the risks of the bank under control, looking at a single number every day. Later, the methodology spread to the entire market. See: Phelan (1997).
[8] For an extensive introduction to VaR, see Jorion (2007).
[9] The most well-known debate is on the difference between risk and uncertainty. See: Knight (1921).

Even if the soundness of the method was not ascertained, traders and banks quickly started to adopt it.

These kinds of models are based on past data to "predict" the future. If something unexpected happens (like the black swan in Taleb's metaphor[10]), the results can change considerably. Problems are in general in the tail of the probability distribution, which is not considered in the confidence interval.

Somewhat surprising was the decision of the Basel Committee to use, although with many adjustments, a similar framework in the core of the new regulation. There were certain positive impacts in doing so. Bankers, and not only traders, had to improve their education to start to cope with financial risks differently from the past, and banks were obliged to hire experts to deal with risks professionally. But, on the other hand, industry and the regulators/supervisors started relying too much on such instruments, which do not give total assurance, not considering that the devil hides in the tail, that models can be misspecified, and that the past may not always be a guide for the future. In particular, supervisors, who are not looking to increase profits as traders do, should be very cautious vis-à-vis extreme risks, even when these events are not frequent.

Other important risks, such as credit and operational risks, were considered with different approaches, but a similar philosophy, in the sense of relying on market instruments or statistical tools. In the case of credit risk, great importance was also given to ratings, external or internal[11]. Operational risk was treated with statistical methods, without considering that only a portion of operational losses has relative regularity. Cases such as Barings, for example, when a trader in the Singapore branch lost over a billion dollars making unauthorized trades, are difficult to predict in such a way[12]. In general, the possibility of using internal models to calculate the risk of the overall portfolio led to a compression of the amount of regulatory capital for large banks.

[10] See: Taleb (2005) and (2007).

[11] The wrongdoing of some private agencies, which provided high ratings to top segments of structured products, was among the reasons for the subprime crisis. This paper does not enter into the debate on the causes of such behavior (conflict of interest, inability to evaluate risks, etc.). It is worth remembering that six US firms agreed to pay more than 49 million US dollars to settle the SEC charges.

Internal ratings can facilitate capital arbitrage. Such regulation, based on a credit VaR approach, is also criticized for a lack of transparency and insufficient granularity, which should minimize the idiosyncratic risk. See Haldane and Madouros (2014); Bruno *et al.* (2023); Böhnke *et al.* (2022).

[12] Barings, a very old British merchant bank, went bankrupt on that occasion. On the Baring case, see: Bank of England (1995); in Italian, see also Mieli (1996).

DOI: 10.65644/EIIE.078.04.0635

5. The Basel Capital Agreement and the prevention of banking crises: an illusion?

The first Basel Capital Accord was adopted in 1988[13]. The focus was on credit risk, and the measure introduced was very simple: a minimum capital requirement (core capital and additional capital) of weighted assets. The weight was rudimentary. Indeed, the initial set of rules was probably just a way to probe the banking market and to observe the response to an international regulation. In 1999, a more organic set of measures was proposed, and in 2004, a revised framework, generally called Basel II, was approved. Even if certain important aspects, such as liquidity, were still in the pipeline, the new framework, based on three pillars (capital requirements, supervisory review, and disclosure), was considered close to the final solution of the efforts to avoid systemic banking crises.

In the US, the first years of the new millennium were years of economic and monetary policy known as "great moderation", and a huge bubble grew unchallenged. There was a spread of subprime mortgages in the field of real estate (but also of other loans such as those in the field of credit cards, etc.), which, according to the "originate to distribute" model, were then securitized and sold. As a result, the risks of Asset Backed Securities, financial instruments not always easy to fully understand, were not properly assessed. Eventually, the bubble burst, and some market participants/investors started to have serious problems. The first important case was that of Bear Stearns[14]. The Federal Reserve of New York, after the provision of an emergency loan that was not enough to stop the crisis, arranged the acquisition of the bank by J.P. Morgan, a more important investment bank, to avoid the consequences of an unmanaged failure of the bank. A few months later, a larger investment bank, Lehman Brothers, was hit by the subprime crisis. This time, the Federal Reserve Bank of New York decided not to intervene, probably to keep down the risk of spreading a moral hazard phenomenon in the market. The decision not to rescue the bank with whatever kind of bail-out triggered the worst global financial crisis after the Great Depression. The entire banking system of the United States seemed close to a meltdown, and the crisis spread to developed and less developed countries. The effects in the United Kingdom were stunning: after the early Northern Rock case, there took place the astonishing collapse of the Royal Bank of Scotland and the serious difficulties of other important financial institutions. To stop the crisis, the British government intervened with a set of measures, such as

[13] See Basel Committee on Banking Supervision (2025).
[14] See, *i.a.,* Mishkin (2011); Mieli (2010).

bail-outs and guarantee schemes. The shockwaves of the crisis annihilated the banking systems of smaller countries, such as Iceland and Ireland[15].

6. The regulators' responses to the so-called Great Financial Crisis

The shock caused by the GFC of 2007-2009 had many consequences for the regulatory framework. Some measures were intended to fill the gaps left to risks by Basel II. First, the rules limiting the risks stemming from derivatives and complex products. A resolution framework was another measure to integrate the original framework to facilitate an orderly crisis, but some aspects have to be discussed (see *infra*)[16]. Another set of measures was directed to enforce and refine the first pillar of the Basel approach: capital. *In primis*, to be a real shield against losses, capital requirements must consist of shares or of assets very similar to capital with regard to their capability to absorb losses. Secondly, the amount of capital should be enough to absorb large losses. It is difficult to define the "right amount" of capital as an efficient cushion against losses, but certainly when the GFC arrived, the amount of capital was too low[17]. So, the decision was taken to increase the capital endowment of banks and to introduce buffers.

On the other side, a step back to the original approach, was the introduction of rudimentary limits to the leverage of banks. In general, the set of measures adopted seems to demonstrate a lesser faith in internal models and the rating system.

As anticipated, some aspects of the resolution framework need to be discussed, in particular the adoption of the bail-in to avoid the bail-out. Can a rule mainly designed to contain public expenditure to defend the so-called taxpayer money or avoid an increase in public debt meet properly a prudential regulation goal? Trying to use only one tool to get two objectives is not efficient, as Tinbergen explained[18]. According to many authors, switching from bail-out to bail-in should also enforce market discipline. But in general, market discipline is largely a utopia. To understand the real situation of a bank that could have stability problems necessitates a great deal of data that is not easy to obtain on the market. Sometimes, even the managers are unable to fully realize in advance the real situation.

[15] For an analysis of the interactions between real aspects and financial factors, see also Gertler and Gilchrist (2018).
[16] On the Resolution Framework, see: Bank for International Settlements (2017). Also, visit the site of the "Single Resolution Board" of the European Union (https://www.srb.europa.eu/en).
[17] Merrouche *et al.* (2010).
[18] For the so-called Tinbergen rule, see Tinbergen (1952).

Furthermore, when earnings announcements are less favorable than expected, as a result of the reaction of financial markets, the share price of banks goes down. Managers can react in a virtuous way and improve the efficiency of the bank to restore profitability, but sometimes they choose to engage in riskier investments, a behavior called gambling for resurrection[19].

De facto, market discipline did not help very much in the cases of recent bank failures (see *infra*). In conclusion, the third pillar is not always so sound.

On the other hand, the bail-in fear can unleash a run when uncontrolled rumors spread in the market[20]. Only a solid reputation can help in such cases.

The Too Big To Fail (TBTF) phenomenon was detected, but the solutions adopted were too weak. The reality is that large banks are not only too big to be rescued, but also to be regulated and supervised[21]. A capital surcharge is not enough to avoid a crisis, which can become a systemic one. The real solution is to avoid banks becoming too big, but such a policy is very difficult to realize for many reasons.

7. The 2023 banking turmoil

In 2023 some medium-sized US banks started to have problems after the 2022/23 increase of interest rates by central banks in the US and other countries. In particular, Silicon Valley Bank had an important outflow of deposits and large unrealized losses in the bond portfolio[22]. Other banks also suffered distress caused by their involvement in the crypto sector. The reasons were not the same for all the intermediaries, but a common characteristic was found in the lack of risk culture and a weak risk management process, not detected by the market or by the supervisors. The contagion in the US market was avoided, but the crisis of the American banks influenced financial markets worldwide and had a role in the Credit Suisse case, which was a little different and more complicated.

[19] See Min (2014).
[20] See Avgouleas and Goodhart (2015). In general: Kindleberger (1978); Calomiris and Gorton (1991).
[21] See Bart and Wihlborg (2016).
[22] Jiang *et al.* (2024); Basel Committee on Banking Supervision (2023).

For a long time Credit Suisse, a Globally Systematically Important Bank (G-SIB), although compliant with the capital requirements[23], was not at its best. The incertitude caused by events at American banks contributed to the decrease in the price of the shares of the bank. But some specific events, such as the public refusal to inject more funds into the bank by a top shareholder, led to a crisis, which eventually was solved by the Swiss authority with a merger with UBS, the other important Swiss bank. The financial institution created with the merger was huge, especially considering the dimension of the host country, Switzerland.

It was a *drôle de* bail-out, a very peculiar one.

Despite the not-too-bad situation as regards capital and liquidity, the reputation of the bank was destroyed by a long series of scandals, and the widespread opinion of the stakeholders was that the bank was on the verge of collapsing.
It is interesting to consider that the fear of loss of uninsured deposits caused or, at least, accelerated the run. The Swiss Authority intervention, at the end of the story, saved not only the uninsured depositors (much ado about nothing), but even the shareholders who did not bear any burden. Only the holders of risky bonds (AT1[24]) lost the match. In this paper the fairness of this aspect (the respect of the usual hierarchy) is not discussed. Probably the Courts of many jurisdictions will work for a long time on it[25].

Here are some considerations:

a) When the going gets tough, the bail-in is forgotten and the old bail-out returns into fashion;
b) The cushion represented by capital, even when surcharges are applied, cannot be enough to avoid a crisis when reputation, which is probably the most important asset for a bank, has gone.

8. Some recent proposals

Many economists asked for a major increase in capital requirements. For instance, 20%, plus a 10% buffer (Admati and Hellwig, 2024). From a supervisor's point of view, more capital is better than less capital. But, first, how realistic is the implementation of such a measure in a reasonable

[23] The present regulation imposes on G-SIB a buffer surcharge.
[24] Additional Tier 1 (AT1) bonds are perpetual fixed-income securities that large banks utilize to augment their core equity base. They are particularly risky because they are lower than all the other debts.
[25] Böni and Zimmermann (2024).

DOI: 10.65644/EIIE.078.04.0635

period? Some experiences have shown that acting rapidly can be procyclical[26]. Second, why 30% or another magic number? Only with a 100% ratio would we be completely sure of avoiding runs.

We have to keep in mind that in the past to withdraw funds it was necessary to queue at the counter during the opening times of the bank[27]. Now, it is possible to move funds from one bank to another in a few seconds.

Scrapping the present limit of the deposit insurance[28] can give the illusion of making disappear the incentive of depositors to run in case of rumors, but its funding can be very onerous, and the intervention even unrealistic, in the case of a large bank or of a systemic crisis[29].

9. Conclusion

To reduce the probability of other crises that would be difficult to deal with, and which could become systemic, several actions are required.

First of all, depositors have to be convinced that they do not risk losing their money or, at least, that that possibility is exceptional. To do so, the insurance of deposits should be revised, but everyone must know that governments can act as a sort of last guarantor (as they generally did in the past). The automatic bail-in procedure should be limited to holders of shares and AT-1 bonds. To cope with the bankers' moral hazard problem, supervisors should receive full powers to act in an incisively way, if needed[30].

A process to increase capital, and especially buffers, should be pursued, but prudently and progressively, possibly by asking banks to retain profits[31]. Liquidity rules should be stressed.

Rules should be simplified and their complexity reduced. To be compliant is now very costly and it is not certain that it is more difficult to circumvent a detailed regulation than a simpler one[32]. On the other hand, a complicated framework is probably appreciated mainly by consultants and is a *de facto* competitive advantage for larger banks.

[26] On this subject, see Angelini *et al.* (2010).
[27] See Galbraith (2017).
[28] Despite its usual name, this scheme is not an insurance, but a guarantee.
[29] Anginer and Demirgüç-Kunt (2024).
[30] On the importance of supervision, see Enria (2023).
[31] For an effective shaping of capital requirements, see Hoenig (2013).
[32] Haldane and Madouros (2012).

It is evident that TBTF banks are a threat to financial stability and the measures put in place to mitigate the risk of systemic crises are probably not enough. A radical solution would be to significantly reduce the size of large banks, but such a policy is probably politically too difficult to adopt.

Another point is to rethink the limitations of activities: the ring-fencing solution (that is to say, the virtual segregation of retail banking from investment banking and international activity) seems not to be very effective, and a stronger framework to avoid banks accepting deposits to engage in financial speculations should be reintroduced worldwide.

On the other hand, some perplexities arise from the so-called Danish compromise. The possibility for *bancassurance* conglomerates, introduced provisionally in 2012 and recently reaffirmed definitively, of getting favorable conditions in terms of capital requirements, arouses mixed reactions. On the one hand, the measure could favor cross-border mergers and, in general, increase the diversification of risks. On the other hand, it is a further push that would increase the dimensions of conglomerates and aggravate the TBTF problem.

According to some authors, Basel is a journey[33]. They are probably right. But the real problem is: are we going in the right direction?

[33] See Enria (2019).

DOI: 10.65644/EIIE.078.04.0635

REFERENCES

Admati, A. and M. Hellwig (2024), The Bankers' New Clothes: What's Wrong with Banking and what to Do about it, Princeton University Press, New Edition.

Angelini, P., A. Enria, S. Neri, F. Panetta and M. Quagliariello (2010), "Pro-Cyclicality of Capital Regulation: Is it a Problem? How to Fix it?", Bank of Italy, Occasional Papers No. 74.

Anginer, D. and A. Demirgüç-Kunt (2024), "Deposit Insurance and Market Discipline", Center for Global Development, Working paper No. 703.

Atkinson, T., D. Luttrell and H. Rosenblum (2013), "How Bad was it? The Costs and Consequences of the 2007-09 Financial Crisis", Federal Reserve Bank of Dallas, Staff Papers, Issue July.

Avgouleas, E. and C. Goodhart (2015), "Critical Reflections on Bail-Ins", *Journal of Financial Regulation*, 1(1), 3-29.

Bank of England (1995), Report of the Board of Banking Supervision Inquiry into the Circumstances of the Collapse of Barings, London.

Bank for International Settlements (2017), Bank Resolution Framework, FSI Executive Summary.

Barnichon, R., C. Matthes and A. Ziegenbein (2018), "The Financial Crisis at 10: Will we ever Recover?", FRBSF Economic Letter No. 19.

Barth, J.R. and C. Wihlborg (2016), "Too Big to Fail and too Big to Save: Dilemmas for Banking Reform", *National Institute Economic Review*, 235(1), R27-R39.

Basel Committee on Banking Supervision (2023), Report on the 2023 Banking Turmoil, Bank for International Settlements.

Basel Committee on Banking Supervision (2025), History of the Basel Committee, Bank for International Settlements.

Böhnke, V., S. Ongena, F. Paraschiv and E.J. Reite (2022), "Back to the Roots of Internal Credit Risk Models: Why Do Banks' Risk-Weighted Asset Levels Converge over Time?", Swiss Finance Institute Research Paper Series 22-33.

Böni, P. and H. Zimmermann (2024), "The Credit Suisse Bailout in Hindsight: Not a Bitter Pill to Swallow, but a Case to Follow", *Financial Markets and Portfolio Management*, 38(1), 1-35.

Bruno, B., I. Marino and G. Nocera (2023), "Internal Ratings and Bank Opacity: Evidence from Analysts' Forecasts", *Journal of Financial Intermediation*, 56, 101062.

Calomiris, C.W. and G. Gorton (1991), *The Origins of Banking Panics: Models, Facts, and Bank Regulation*, in: R. Glenn Hubbard (Ed.), "Financial Markets and Financial Crises", University of Chicago Press, pp. 109-174.

Caprio, G. and P. Honohan (1999), "Restoring Banking Stability: Beyond Supervised Capital Requirements", *Journal of Economic Perspectives*, 13(4), 43-64.

De Bonis, R. and M. Trapanese (2023), "Le quattro età della regolamentazione bancaria: che fare oggi?", Banca d'Italia, Questioni di economia e finanza (Occasional Papers) No. 796.

Enria, A. (2019), "Basel III – Journey or destination?" Speech at the European Commission's DG Financial Stability, Financial Services and Capital Markets Union Conference on the Implementation of Basel III, November 12.

Enria, A. (2023), "Banking Supervision beyond Capital", Speech at the EROFI 2023 Financial Forum, September 14.

Galbraith, J.K. (2017), Money: Whence it Came, Where it Went, Princeton University Press.

Gertler, M. and S. Gilchrist (2018), "What Happened: Financial Factors in the Great Recession", *Journal of Economic Perspectives*, 32(3), 3-30.

Goldsmith, R.W. (1955), *Financial Structure and Economic Growth in Advanced Countries: An Experiment in Comparative Financial Morphology*, in: "Capital Formation and Economic Growth", Princeton University Press, pp. 112-167.

Guiso, L., P. Sapienza and L. Zingales (2006), "The Cost of Banking Regulation", NBER Working Paper No. 12501.

Haldane, A. and V. Madouros (2012), "The Dog and the Frisbee", Speech given at the Federal Reserve Bank of Kansas City's 366th Economic Policy Symposium, "The Changing Policy Landscape," Jackson Hole, WY, August 31st.

Haldane, A. and V. Madouros (2014), *Complexity in Financial Regulation*, in: V. Acharya, T. Beck (Eds) "The Social Value of the Financial Sector: Too Big to Fail or Just Too Big?", World Scientific Publishing, pp. 455-463.

Hoenig, T. (2013), "Basel III Capital: A Well-Intended Illusion", Remarks to the International Association of Deposit Insurers 2013 Research Conference, Basel, April 9.

Hon Chu, K. (1996), "Is Free Banking more Prone to Bank Failures than Regulated Banking?", *Cato Journal*, 16(1), 47-61.

Jiang, E.X., G. Matvos T. Piskorski and A. Seru (2024), "Monetary Tightening and US Bank Fragility in 2023: Mark-to-Market Losses and Uninsured Depositor Runs?", *Journal of*

Financial Economics, 159, 103899.

Jorion, P. (2007), Value at Risk: The New Benchmark for Managing Financial Risk, McGraw-Hill.

Kapp, D. and M. Vega (2014), "Real Output Costs of Financial Crises: A Loss Distribution Approach", Cuadernos de Economía, 37(103), 13-28.

Kindleberger, C. (1978), Manias, Panics, and Crashes: A History of Financial Crises, Basic Books: New York.

Knight, F.H. (1921), Risk, Uncertainty and Profit, Hart, Schaffner and Marx: Chicago.

Merrouche, O., M.E. Detragiache and A. Demirgüç-Kunt (2010), "Bank Capital: Lessons from the Financial Crisis", IMF Working Paper 10/286.

Mieli, S. (1996), "Rischi operativi dell'intermediazione in strumenti derivati: considerazioni a margine della crisi della Barings", *Credito Popolare*, n. 2.

Mieli, S. (2010) "Banca, rischio, vigilanza: riflessioni alla luce della crisi", Intervento alla Fondazione "Angelo Colocci", Università di Macerata, Jesi, 12 novembre.

Min, D. (2014), "Understanding the Failures of Market Discipline", UC Irvine School of Law Research Paper No. 2014-15, Available at SSRN: https://ssrn.com/abstract=2403988

Minsky, H.P. (1994), "Issues in Bank Regulation and Supervision", H.P. Minsky Archive, https://digitalcommons.bard.edu/hm_archive/72/.

Mishkin, F.S. (2011), "Over the Cliff: From the Subprime to the Global Financial Crisis", *Journal of Economic Perspectives*, 25(1), 49-70.

Molteni, M. and D. Pellegrino (2024), "The Establishment of Banking Supervision in Italy: An Assessment (1926–1936)", *Business History*, 66(6), 1442-1470.

Phelan, M.J. (1997), "Probability and Statistics Applied to the Practice of Financial Risk Management: The Case of JP Morgan's RiskMetrics™", *Journal of Financial Services Research*, 12(2), 175-200.

Rajan, R. and L. Zingales (1996), "Financial Dependence and Growth", NBER Working Paper No. 5758.

Reiss, J. (2021), Public Goods, Stanford Encyclopedia of Philosophy.

Romer, C.D. and D.H. Romer (2017), "New Evidence on the Aftermath of Financial Crises in Advanced Countries", *American Economic Review*, 107(10), 3072-3118.

Taleb, N. (2005), The Black Swan: Why don't we Learn that we don't Learn, Random House: NY.

Taleb, N. (2007), The Black Swan: The Impact of the Highly Improbable, Random House: NY.

Tinbergen, J. (1952), "Interdependence and Consistency of Economic Policies", *Econometrica*,

20(2), 306-332.

Vanatta, S. (2020), Histories of Bank Supervision, Available at SSRN: https://ssrn.com/abstract=3749116 or http://dx.doi.org/10.2139/ssrn.3749116 .