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## Can it be prevented this time? The role of profits in banking regulation

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## **Working Paper No. 1021**

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### **Can *It* Be Prevented This Time? The Role of Profits in Banking Regulation**

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**ABSTRACT**

Since the nineties, crises have punctuated financial markets, shattering the conventional wisdom about how these markets work and how to regulate them, and forcing a deep rethinking of the supervisory framework that, however, did not change much of the banks' behavior and incentives. In particular, banking regulation did not face the nexus profitability-riskiness. Based on Minsky's financial instability hypothesis, we discuss the literature on banks' profitability and its relation to the originate-to-distribute model. We also propose a different strategy for banking regulation, based on a profitability cap that prevents financial innovation from overwhelming supervision. Finally, we discuss the data for the US case, confirming the importance of profitability as a signal of incoming troubles and the possibility of using the profitability cap to greatly simplify banking regulation.

**KEYWORDS:** banking regulation, financial stability, Minsky, Basel 3, profitability

**JEL CLASSIFICATIONS:** G01, G28

## **1. INTRODUCTION: CRISIS AND BANKING SUPERVISION**

“There is nothing more inevitable than death, taxes and bank failures” (Tooze 2023).

Since the nineties, crises have punctuated financial markets. The biggest of all, in 2007–8, came after years of significant growth in banking assets and profits, a dynamic that had a decisive effect on the severity of the collapse (Jordà, Schularick, and Taylor 2010) to the extent that it is believed that this growth, and the overall role of finance, had become excessive (Arcand, Berkes, and Panizza 2012). Banks, especially the largest, had a critical impact on this trend, with a rapid increase in their operating volumes helped by the originate-to-distribute (OTD) model that coupled a strong dynamic of credit volumes with the decline in the quality of banks' assets (Purnanandam 2010; Rosen 2010). For decades, the evolution of banking supervision, especially prudential rules, followed the evolution of the economic analysis of regulation (Harnay and Scialom 2015). Therefore, from one side, light-touch banking supervision contributed to the underestimation of the riskiness of the banks' business model (Kregel and Tonveronachi 2013), and, from the other side, mainstream analysis of banks and finance also did not help, because it neglected decisive aspects of the banking business, contributing to the pro-cyclicality of credit aggregates, highlighted long ago by scholars such as Minsky and Schumpeter (Minsky 1992).

The crisis has forced a profound rethinking of the supervisory framework, leading to the development of new tools and strengthening those already existing (Mastromatteo and Esposito 2016). Although many changes focused on macroprudential measures, the new regulatory framework (Basel 3 and beyond) also resulted in a greater quantity and quality of capital for individual banks. At least for a while, banks were forced to put stability before dividends and international regulators insisted on the importance of banks deleveraging for greater financial stability (Gambacorta and Karmakar 2018).

The development of the events has shown the paramount importance of profitability. The search for profits defines the strategies of the banks in terms of business model, concentration, asset composition, and regulatory compliance. Moreover, retained profits create most of the new capital (Raja 2022). Banking regulation does not directly confront profitability, but intersects

many of its elements. However, the specific nexus was lacking and still is. This is peculiar because the basic wisdom of finance tells us that when a financial asset is more profitable it is also riskier. This was acknowledged somewhat by banking regulators, for instance with an analysis of the bond issues of the banks. In 1999, the Fed explored the idea of using interest rates of subordinated debt to grasp the riskiness of a bank for regulatory purposes (Federal Reserve 1999). This was part of the market discipline trend of banking regulation that, more recently, proposed to use the credit default swap for the same goal (Shan, Tang, and Yan 2021). The crisis has shown that markets are too pro-cyclical to allow price mechanisms to give early warnings: “Market prices cannot save us from market failures. Market prices do not predict market crashes; if they did crashes would not occur” (Persaud 2008). It is interesting to observe that all these instruments are somewhat connected to profitability but no proposal was made to have a direct connection between profits and supervisory requirements. The present work aims to make that proposal.

The paper is organized as follows. We start by analyzing Minsky’s financial instability hypothesis in its connections to profitability, and then we analyze the specific features of the OTD model in terms of cash flows and profits. Thirdly, we discuss the literature analysis of profitability of the banks and deepen the re-regulation wave analyzing its meaning and its potential to tame future crises, concluding that the Basel 3 framework did not change banking business models too drastically. We then outline the proposal for a *maximum allowed profits*—a prudential tool in terms of a cap to banks’ profitability—and discuss empirical strategies to implement them. Using data from the US case, we show the importance of profitability as a signal of growing tensions and the possibility of using the profitability cap to drastically simplify banking regulation.

## **2. PROFITS AND INSTABILITY**

“Periods of stability of a modern capitalist economy are transitory” (Minsky 1996).

Minsky dared to put instability into the core functioning of the financial system, explaining that instability is the most important feature of capitalist development. This is why, aside from a quotation here and there, it is difficult to fit his theory into the mainstream theoretical world. Of the complex and, at times, unclear explanations that Minsky gave of the issue in different texts, we will touch on what is more important for our purposes.

The key point in Minsky's analysis is the link between profits and investment. Investment is decided to increase profits and the cash flows connected to profits can increase investment. In the continuous movement of profits and investment, it is not possible to establish a one-way connection as, for instance, mainstream economics does, between profits (as savings) and investment. The important point is that profits decide how sustainable the debt is: "Whenever profits decreased hedge finance units became speculative and speculative units became Ponzi" (Minsky 1982 [2016], 50). Although there are always different aspects and connections that provoke the crisis, the general dynamic is similar and it is the reduction in the profitability of specific sectors, products, and business models that spark the bubble. When things go well for a sufficient amount of time, the banks' strategies are more and more aggressive, allowing their clients to be funded in Ponzi finance territory: "bankers are willing to sanction this decline in margins because their appetite for risk has risen along with that of their clients" (Kregel 1997). This means that the longer the process is allowed to proceed, the more destructive and inevitable it becomes (Tymoigne 2009). The dynamic is uncertain, messy and recurring. Being aware of this truth allows assessments of the actual robustness of banking regulation before the crisis. For instance, Wray (2006) observed that Basel 2 would have had minor effects in improving the situation "not because Basel 2 is poorly designed, but rather because it does not and cannot do much about the primary sources of financial instability." This was observed when mainstream economics was praising market discipline and pushed banking regulators to go even further on the road of deregulation (Freixas and Rochet 2008, 335ff.).

When the Ponzification of the economy is sufficient, the proportion of debt with anomalies is so high that banks and investors meet problems too and this is reflected in the collapse of asset prices on capital markets and in the growth of the banks' loan loss provisions. As Minsky put it: "Profit opportunities within a robust financial structure make the shift from robustness to

fragility an endogenous phenomenon” (Minsky 1986a, 210). He called it the core of his theory: “The basic theorem of the financial instability hypothesis is that, over an extended period of prosperous times, the weight of speculative and Ponzi finance increases, so that the economy migrates from being financially robust to be financially fragile” (Minsky 1986b). Although the Minskyan analysis concern all sectors, what is more immediately relevant for investment is banks’ profitability, because it determines the availability of funds for investment.

The economic stability is therefore crucially dependent on the health of the financial system. In this sense, it is important to analyse what happens to banks and financial markets during the different stages of a financial cycle. The “lure of a bonanza,” as Minsky (1959) called it, spurs financial innovation and profitability, but also uncertainty. When things go well, banks create money to fund investment and when investment becomes profits, money flows back to the banks. But in the Ponzi stage of the bubble, flows become irregular, credit and money creation become unstable, and instability is transmitted to profitability. In other words, to be effective, a stabilization policy must stabilize profitability: “The critical task of stabilization policy is to prevent sharp decreases in profits” (Minsky 1986b).

The dimension and the aim of the stabilization policy are dictated by this factor, given that “business profits are the key element in determining how well a capitalist economy works” (Minsky 1986a, 303). This conclusion is particularly relevant during a crisis, when profitability collapses, especially bank’s profits that are, on the whole, pro-cyclical (Detragiache, Tressel, and Turk-Ariss 2018); this means that policymakers should aim to smooth the cycles in profitability and particularly in banks’ profits (Kohlscheen, Murcia Pabón, and Contreras 2018).

Although the financial sector, with the unfolding of the cycle, always transforms a hedged situation into Ponzi finance, it does it each time with specific features. In the case of the OTD model, the links between different operators (banks, special vehicles, institutional investors, asset managers, and so on) are multiplied by the risk sharing that in the downturns becomes the main channel of contagion, making it difficult for central banks and banking supervisors to assess the actual risks of each operator (Kregel 2008). The transition from traditional, bank-based credit to a more market-based credit also changed the way banks were funded, with the growth of the repo

markets and the connection between traditional intermediaries and the shadow banking system. Repo markets, playing a key role in facilitating the funding in the financial system, changed the cash flow quantities and the prices of funding for the banks, therefore becoming a core aspect of the stability of the banking system (Pacces 2013; CGFS 2015). OTD also makes unproductive the discussion—that started after the crisis—on a possible return to the Glass-Steagall Act with the separation of investment banking from retail banking, due to links produced by the OTD model itself.

### **3. BANKS' PROFITS AND BANKING REGULATION**

Minsky's ideas can help banking regulation and supervision on many fronts.<sup>1</sup> First and foremost, they can explain how financial instability comes about. The most striking feature of the financial instability hypothesis is the paradoxical truth that the system is at its most fragile when all its positive characteristics have peaked, because the financial cycle is built on a growing financial leverage that is bearable as long as new investors enter the scene. On the contrary, the way regulators looked at profits is only as a source of new capital. From the first international accord on capital adequacy (Basel 1, BCBS 1988) to the third one, 22 years later, (Basel 3, BCBS 2010) the meaning of profitability in the eyes of banking regulators has always been the same: a way to rebuild banks' capital buffers. The vicious circle that linked profitability to riskiness was not considered until recently (for instance: "banks with limited current earnings power may also be tempted to take on more risk" [De Guindos 2019]).

Banks' profits are connected both to macroeconomic/macroeconomic factors and to business model factors, as the literature has deepened<sup>2</sup>. For instance, economic growth influences credit volumes on the upside (Bolt et al. 2012) and loan loss provisions on the downside (Brady 1999). Moreover, low policy rates also reduce interest margins (Claessens, Coleman, and Donnelly 2018), while crises force business concentrations that rescue profitability, especially trough size growth (Menicucci and Paolucci 2016). Although it is dubious where scale economies end in

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<sup>1</sup> In this work, although not technically accurate, we use the terms regulation and supervision indifferently.

<sup>2</sup> For an overview, see El Mehdi 2018.



banking (Gambacorta and van Rixtel 2013), big banks can invest more, are stronger in more innovative and lucrative business, and can better withstand compliance costs or recapitalize to avoid forced deleveraging (Detragiache, Tressel, and Turk-Ariss 2018). Moreover, they have lower funding costs and are also more politically influential. Normally they are also more profitable, but it is difficult to detect if this is due to efficiency or greater risk (Chang, Nieh, and Peng 2011).

After the crisis, the direction taken by banking supervision, even if not necessarily for a conscious return to his theories, reflected Minskyan ideas (for a general outline of the re-regulation different programs, see Trapanese 2019). For instance, liquidity risk was basically ignored in the Basel 2 framework, while back in 1966 the Office of the Comptroller of the Currency had asked Minsky to develop regulatory tools based on a “cash flow–oriented bank examination” process (Minsky 1966, 1967) that puts liquidity at the center stage. The liquidity coverage ratio (BCBS 2013) is a reappearance of Minsky’s approach, an important turn for supervision (Tymoigne 2009). Liquidity is strictly connected to the features of the banks’ prevailing business model and through these features banking rules can influence banks’ profits (Baldo, Pasqualone, and Scalia 2020). The post-crisis re-regulation wave has also seen a return of structural rules (for instance the US Volcker rule and UK ring fencing) as well as of the macroprudential regulation, a demonstration of the importance of the financial instability hypothesis that is inherently macro (Kregel 2014). It is interesting to point out that, discussing the Glass-Steagall Act, Minsky observed that its importance resided in the fact that it forced a less complicated business model and hence made it easier for regulators to understand what the banks were doing (Minsky 1995). Structural supervision was effective because it forced a low complexity business model, thus also reducing arbitrage and doubts on the bank’s regulatory compliance (Kregel 2012).

Notwithstanding these important afterthoughts, large banks were not overly worried from the re-regulation wave. In fact, when the details of Basel 3 came out, bank shares gained significantly and many observers pointed out that the industry had basically won, although the rules seemed burdensome. A clear indication that markets were not frightened by the new rules could be found on Wall Street. After the crash of 1929 and the New Deal, with its financial repression

mechanisms, the Dow Jones took more than 25 years to regain its pre-crash level; this time it only needed five years. From the end of 2008 to the end of 2019, Wall Street indices have almost tripled. All in all, the general conduct of business has not changed much and, therefore, financial troubles have been only delayed, because they are entrenched in the core dynamics of the system. In particular, the issue of profitability has not been tackled. The search of profitability is what changes the business model of the banks, leaving behind banking supervision. It was observed:

The normal, profit-seeking activities of agents lead to innovation in order to create new sources of profits...The search for profits also drives agents to avoid, evade and adapt to the structure of regulation and intervention put in place to constrain incoherence. In time this undermines the effectiveness of a regime of intervention that ‘stabilizes the unstable system’. Therefore, if regulation is to remain effective, it must be reassessed frequently and made consistent with evolving market and financial structures. (Minsky and Campbell 1988)

What is needed is a rule that can withstand every stage of the financial cycle and every banking business model.

#### **4. A DIFFERENT PATH: PROFITS INTO BANKING REGULATION**

“Any reform that does not significantly reduce bank profits in the medium-to-long term will have failed” (Stephens 2011).

Banking supervision tries to grasp the riskiness of a bank through indirect measures such as capital and liquidity ratios, bypassing profitability. Previously, we proposed to redress the situation using “profit weighted assets” instead of the ordinary risk-weighted assets (RWA) (Esposito and Mastromatteo 2020). Here we propose another way to look at the connection between riskiness and profitability, reiterating that it is not possible to stabilize the banking system without assessing the link between profitability and riskiness. The current banking

regulation deals with profits only with the basic indicator measure of the operational risk that is based on gross income and hence grows roughly in line with profits (BCBS 2004). After the crisis, the Basel Committee proposed the creation of a countercyclical capital buffer linked to profits but, once again, it was not meant to smooth profitability but to increase capital requirements (Mahapatra 2012).

As for scientific literature, it is now common to find the conclusion that more profits also entail more risks: “profitability is negatively associated with both a bank’s contribution to systemic risk and its idiosyncratic risk, and an over-reliance on non-interest income, wholesale funding and leverage is associated with higher risks” (Xu et al. 2019). This is also because banks try to manipulate model-risk regulation to their ends, to increase dividends and managers’ bonuses (Meiselman et al. 2018). Let’s make a simple example to grasp the point. A bank has \$ 100 billion total assets, \$ 80 billion RWA, and \$1.5 billion of profits. Minimum capital requirements are 8 percent of RWA. This yields a minimum capital of \$6.4 billion and an ROE of 23 percent. Then, the bank implements an internal credit risk model (IRB) that, all things being equal, reduces RWA to 60, thus increasing the ROE to more than 30 percent. This is not a hypothetical but a real-world example from the banking sector. Just weeks before its collapse, Northern Rock was authorized by its regulator “to adopt the advanced internal measurements approach to risk weighting its mortgages, which reduced its required capital by 30% and permitted that amount to be paid out to shareholders” (Calomiris and Herring 2013).

To prevent this race to the bottom, we need a regulatory tool that fends off the endless search of the banks for more profits. Besides the already-mentioned proposal of a profit-related weighting of assets, a useful tool would be a *size cap* (Mastromatteo and Esposito 2016, sect. 7.2). There is a wide consensus that too-big-to-fail banks are a major problem and one that cannot be tackled using micro-prudential supervision. The solution is to have smaller banks. As Stiglitz (2010, 164–165) pointed out: “There is an obvious solution to the too-big-to-fail banks: break them up. If they are too big to fail, they are too big to exist.”

Here we make a proposal that is a mix of these two measures (being a size cap and profit-based prudential rules): a *profitability cap*. A bank that does not produce sufficient profits cannot

withstand competition; banking supervision has always stressed this aspect, but what about a bank that produces *too much* profit? This has never been considered a problem. It is. Not for the single bank *per se*, but because, in order to attract investors and make shareholders happy, banks try to outperform competitors in terms of profitability, so that no profit rate is enough and banks do everything to improve it, starting a competitive race toward higher and higher profits and risks.

To deal with this issue, we propose a *profitability cap rule*: the profits of a bank exceeding a regulatory threshold are put, by law, in an escrow account managed by the central bank to be tapped during financial crises or simply taxed at 100 percent. We think that the best measure of the threshold is in terms of return on assets (ROA) because it does not depend on leverage or on the parameters of regulatory or banks models. Hence, we define the *maximum allowed profit* (map) as:

$$map = \theta \bar{r} A_i \quad (1)$$

(where  $\bar{r}$  is the average ROA,  $A_i$  the total assets of bank “ $i$ ” and  $\theta$  is the regulatory threshold)

As the profits in excess of *map* will be lost, they are as good as nonexistent for the bank. To use the example we already posed: the bank  $i$  has  $A=100$  and we suppose that  $\bar{r}$  is 1 percent and  $\theta$  is 120 percent. This means that profits in excess of 1.2 will be lost (in our example the profit was 1.5, so 0.3 is lost). Given that an excessive profitability does not produce returns to shareholders or managers, their incentives change accordingly. The whole rush toward more profit is ended for good (in the appendix we will deal with possible refinements of the tool).

Given that the crisis has shown the importance of non-risk weighted tools, we might use the leverage ratio, that is already part of the ordinary regulatory framework. Minsky himself proposed to base financial reform on setting limits on leverage ratios as a way to constrain banks’ profitability (Ryoo 2013). However, even if the return of leverage ratio in the arsenal of banking supervision is welcome, the connection it entails between capital and profitability is still a supposition. The same leverage can yield different returns: the fact that more profitable banks

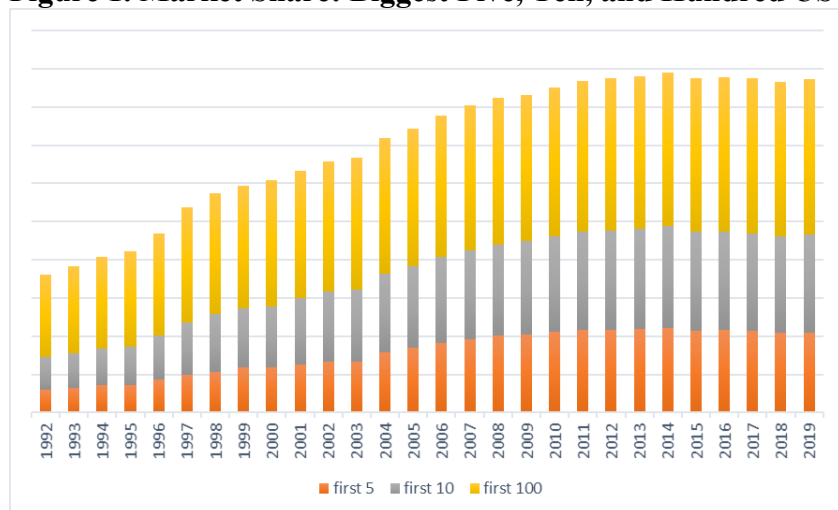
are riskier banks is only partially intercepted by the leverage ratio (Mastromatteo and Esposito 2016). The *map* proposal fully incorporates profitability into banking regulation.

## 5. DATA ANALYSIS

Having presented the tool, we will now analyze how it works practically. We will use the US banking system because it is the largest in scale and more homogeneous in terms of regulation and macroeconomic environment, while the European market has greatly changed over the years (consider the introduction of the Euro or the Banking Union). Our analysis will take the years from the implementation of Basel 1 up to the COVID-19 pandemic (1992–2019).

We start the analysis with the issue of financial concentration. From 1992 to 2019, US banks' numbers have passed from almost 14,000 to a little more than 5,000, while total assets have increased by more than 400 percent (against the 325 percent growth of the GDP). As for market share, the concentration is unmistakable: the combined market share of the three biggest banks increased from 9 to 32 percent, while that of the biggest ten went from 17 to 52 percent.

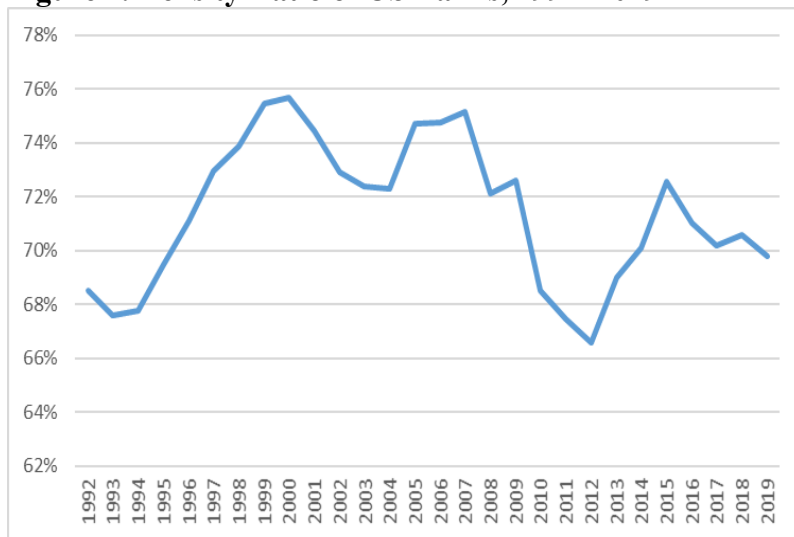
**Figure 1. Market Share: Biggest Five, Ten, and Hundred US Banks, 1992–2019**



Source: FDIC

The second point of interest is whether regulatory changes have influenced profitability. We present a figure demonstrating the density ratio (risk weighted assets, or RWA, on total assets):

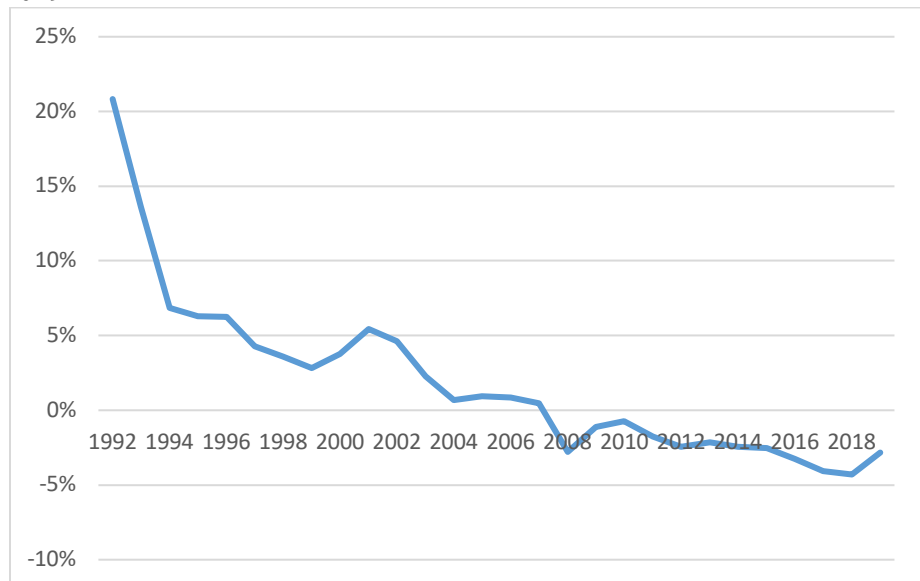
**Figure 2. Density Ratio of US Banks, 1992–2019**



Source: FDIC

The data show the difference between Basel 1, that forced a bank's recapitalization after 1992, and Basel 2, that allowed a reduction of RWA vis-à-vis total assets until the crisis forced the new wave of re-regulation. It is interesting to observe that, during the considered period, *on average*, the density ratio of the biggest banks is higher than the overall average. However, the trend is very different. We can see this with the next figure:

**Figure 3. Density Ratio of the US Biggest 10 Banks Minus the Overall Density Ratio, 1992–2019**

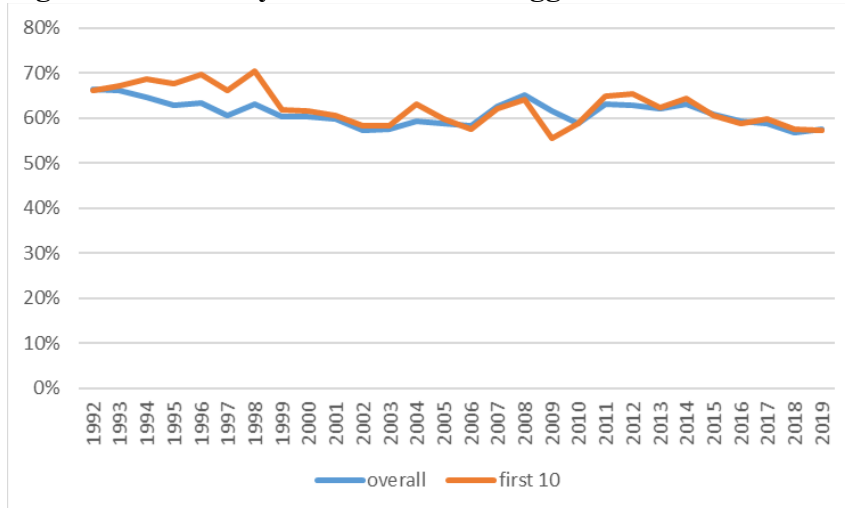


Source: FDIC

The figure shows that the biggest banks were able to make a smarter use of banking regulation to improve their profitability.

A third point is efficiency (see the appendix for the discussion on the definition of the efficiency ratio: here we only observe that the lower the percentage, the better).

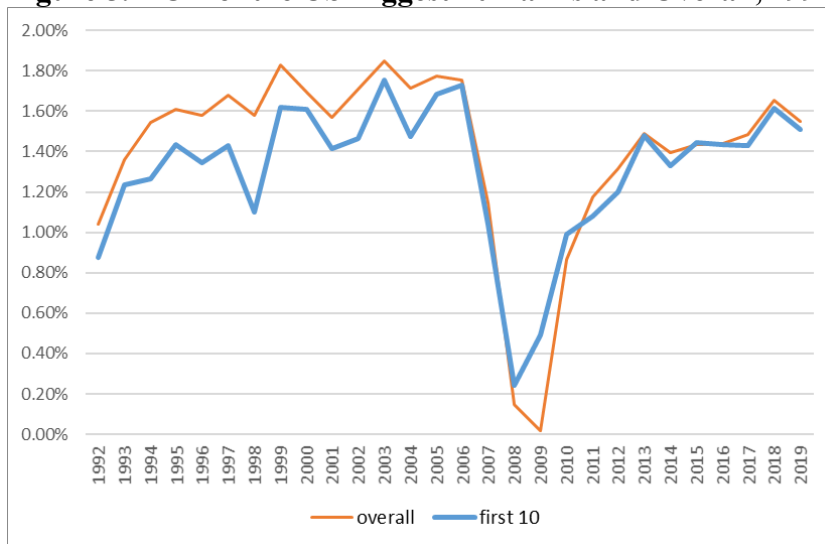
**Figure 4. Efficiency Ratio of the US Biggest 10 Banks and Overall, 1992–2019**



Source: FDIC

As it seems, the overall efficiency is doing well (it improves by around 10 percentage points during these years), and no significant difference between big banks and the rest of the system is detectable. For instance, in the last five years (2014–19), the average difference in the efficiency for the biggest 10 banks and the overall banking system has been of less than 20 basis points. The analysis we developed so far explains why profitability is also comparable among the biggest banks and the whole system.

**Figure 5. ROA of the US Biggest 10 Banks and Overall, 1992–2019**



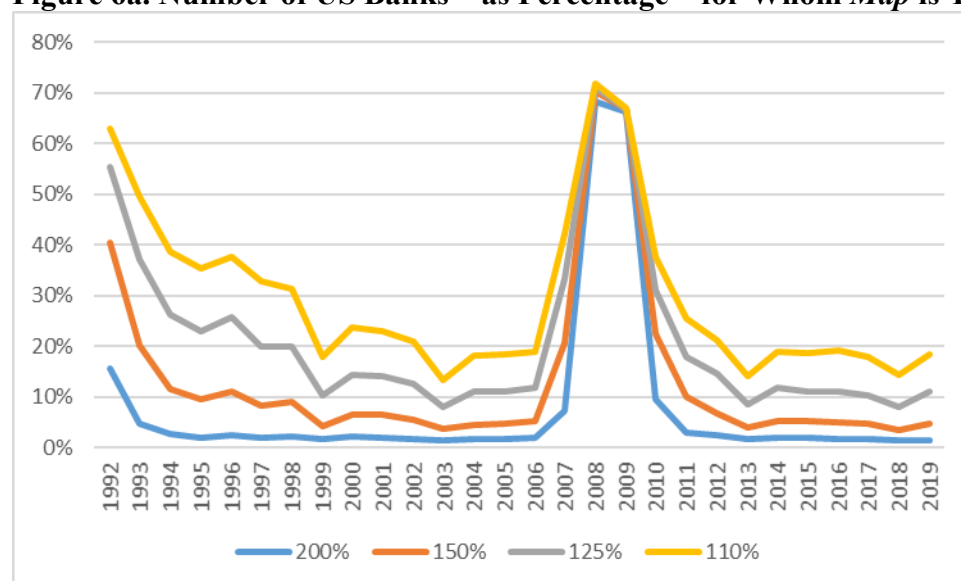
**Source:** FDIC

From Figure 5 it is clear that: a) the trend is very similar for the biggest banks and for the sector as a whole, although the biggest banks' profitability is a bit less pro-cyclical; b) profitability increases until a big crisis destroys it, and then, it goes up again. It is never stable. In other words, it is at its peak just before the collapse, as Minsky suggested. Even if it is counterintuitive, broadly speaking, *the higher the ROA, the higher the probability of a crisis*.

Let's now pass to our proposal. To see how the *map* can work, we use a different threshold and collect the results:

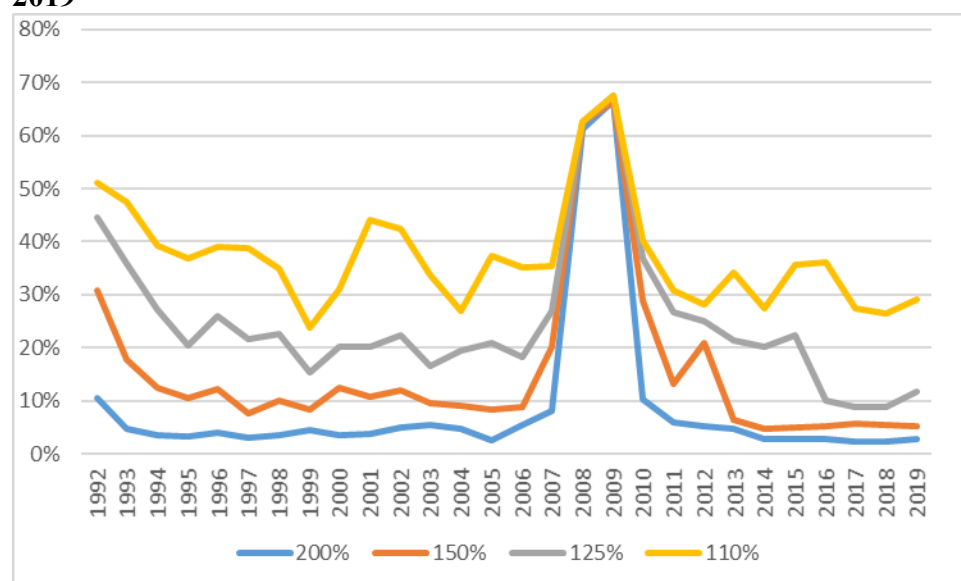


**Figure 6a. Number of US Banks – as Percentage – for Whom *Map* is Triggered, 1992–2019**



Source: FDIC

**Figure 6b. Proportion of Assets Connected to US Banks Whose *Map* Is Triggered, 1992–2019**



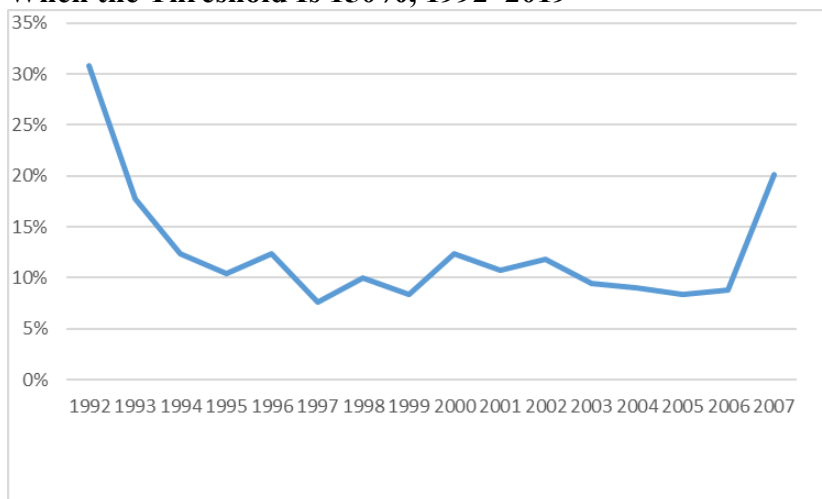
Source: FDIC

In Figure 6 we compute the banks (as numbers and as total assets) whose ROA triggers the *map* when the thresholds are 200 percent, 150 percent, 125 percent, and 110 percent, respectively, of the average ROA in each year. As is obvious, when the threshold is tighter, more banks trespass it, however, when the crisis struck, the difference disappeared. For instance, while in 2006 the proportion of affected assets with the 200 percent and 110 percent threshold was, respectively, 5

and 35 percent; in 2009 it only varied from 66.5 percent to 67.6 percent. This may show that the tool is pro-cyclical, but in reality, it is not possible to identify how the *map* works at a micro level with these data, because they were produced when banks' strategies were not meant to take it into account.

To better discuss how the tool works, we take the 150 percent threshold of the years before the crisis.

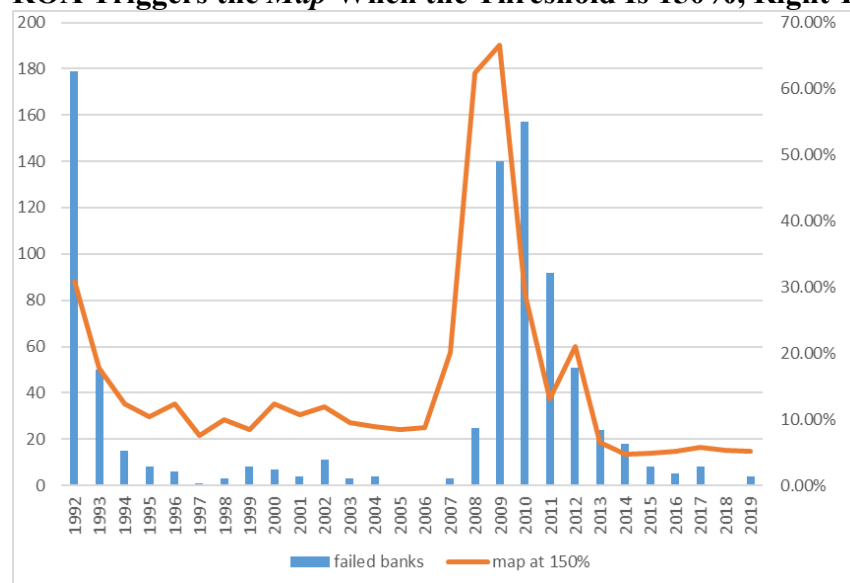
**Figure 7. Proportion of Assets Connected to US Banks Whose ROA Triggers the *Map* When the Threshold Is 150%, 1992–2019**



Source: FDIC

This figure confirms that banks tend to move as a herd to increase profits, so that when the ROA goes up, the banks that seem riskier (i.e., with ROA over the threshold) go down because the *general riskiness* is going up. The overall movement of the banks' profitability hides the individual risk. So much for the effectiveness of micro-prudential supervision. We can use another figure to illustrate this mechanism.

**Figure 8. Number of US Failed Banks, Left-Hand Scale, and Proportion of Banks Whose ROA Triggers the *Map* When the Threshold Is 150%, Right-Hand Scale, 1992–2019**



Source: FDIC

The figure clearly shows that the number of failed banks is connected to our tool with a temporal lag because failures start to rise after the crisis when profitability has already collapsed, but the connection is there. All in all, the data are not sufficient to support the *map* as a micro-prudential tool, because we do not have counterfactual examples of banks' behavior incorporating a profitability cap. On the contrary, the data show that, as an early-warning macro indicator, the growth of profitability is undoubtedly a signal of the coming problems, although it is not easy to detect the threshold for the danger beforehand. For all these difficulties, the picture is clear: the biggest post-war financial crisis has followed the biggest growth of banking profitability. Profits are connected to riskiness much more than to efficiency. Capping bank's profits would stabilize the financial system and the economy as a whole.

## 6. POSSIBLE OBJECTIONS TO *MAP*

We have explained the logic of our proposal and how it fits with the data. Here we discuss possible objections to it.

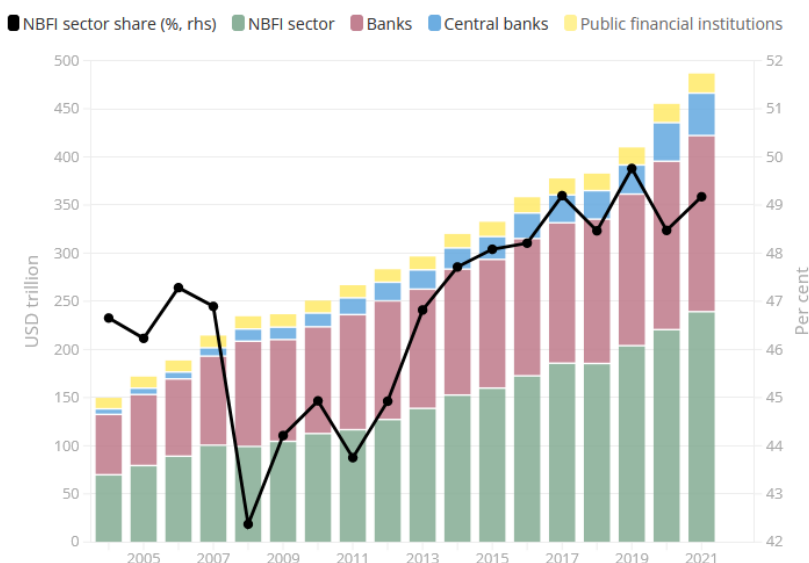
The first objection is that capitalization has increased since 2008. In 2013 it was noted that “banks have steadily increased their capital ratios since the financial crisis” (Cohen 2013). The trend has continued ever since. The problem is that every major crisis after 2008 (the Euro sovereign debt crisis, the pandemic, the inflation-motivated rate hiking after 2022) has shown what the critics of RWA-based regulation observed: capital is not a liquid component of the balance sheet, therefore it plays a minor role against losses (Admati 2012). Moreover, higher capital has been achieved mostly through retained earnings, which has pushed banks to set a strong asset growth strategy and a change in the risk composition of assets (Raja 2022). A bank lends if it is profitable, not if it has capital to spare (Gambacorta and Shin 2016). What drives banks’ behavior is always profitability. Discussing the need for a size cap for the banks we observed:

As for profitability. Before the crisis, higher profits meant a better management (efficiency, innovation and so on). But, as it is now obvious that markets are not efficient, market results do not signal efficiency. More profitable banks are riskier banks. This simple truism is not accepted by banking regulation although it is partially intercepted by the leverage ratio.... Already in 1972, Minsky warned that excessive leverage was a problem for “The drive for profits makes banks work at evading this constraint: i.e. banks want to increase this leverage ratio. (Mastromatteo and Esposito 2016)

This has not changed after 2008. A second objection is that such a tool would help the exit of part of the banks’ business towards non-regulated entities. Recently the vice head of banking supervision at the Fed observed: “We should monitor the migration of activities from banks to the nonbank sector carefully, but we shouldn’t lower bank capital requirements in a race to the bottom” (Barr 2022). This is because the trend is unmistakable as can be seen from the following graph:

**Figure 9. Dimension and Proportion of the Shadow Banking System Worldwide**

**Total global financial assets**



Source: FSB

It is clear that the non-regulated entities are growing without any help from our tool. Moreover, our proposal does not target a business but its results: if a bank put a business outside its balance sheet in a controlled entity, the ensuing profits are still kept inside its income statement (for instance as dividends from the group entities). Banks would not have an incentive to change their assets only to reduce the *map* effects. More generally, Admati et al. (2013) observed in replying to this objection:

[I]n the run-up to the crisis, many activities and entities in the so-called “shadow banking system” relied on credit backstops and other commitments made by *regulated* entities.

Thus, these activities and entities were, and continue to be, within regulators’ reach.

A third objection is that a tool based on ROA does not take into account better capitalized banks that often are also more profitable because their funding is cheaper (Gambacorta and Shin 2016). The problem is that using market measures as risk indicators, as we noted, does not work. Additionally, the equity ratio is enough, although a better capitalized bank is, of course, welcome. For instance, at the end of 2022, the CET 1 Ratio of Credit Suisse was 14.1 percent, the Total Capital Ratio around 20 percent, well above the minimum. The data for Silicon Valley

Bank were around 15.3 percent and 16 percent respectively, once again well above the minimum, and yet both banks collapsed after few months.

Fourth, in a situation of a growing regulatory burden, where intermediaries are hit with rules from different sources, from client-oriented transparency to greening assets, and from the composition of capital to cyber risk, imposing rules now could seem a bad idea. We should also add that the strong increase of compliance costs, with a relevant fixed costs part, favors financial concentration, that should not be an aim for banking regulators. Moreover, this increasingly complex regulation makes it less transparent for both banks and regulators (Herring 2018) opening the door for bargaining that, once again, favors big banks. All in all, more complex regulation tends to push for bigger and more complex financial groups (Haldane 2012). Summing up the effectiveness of the risk-based approach, Barr (2022) stated: “Risk-based capital requirements are important tools; however, they are complex, underinclusive under some conditions, and like all capital requirements, can be gamed.” Given this situation, the logic of the *map* is not to add to other tools but to take their place. RWA-based regulation has been bypassed by banks in many ways, because it cannot prevent innovations, in terms of products, procedures and business models, to regain profitability. Non-risk-based regulation, as the leverage ratio and the liquidity coverage ratio are steps in the right direction, and as Durand and Le Quang (2022) stated: “banking regulation would be better off focusing more on the simple leverage ratio (i.e., equity over total assets) instead of relying on complex and less transparent rules.” These observations are correct but they still miss the point: a bank will do its best to increase its profits, and this invariably means increasing its risks. The *map* aims to enormously simplify banking regulation, thus also making the sector more contestable. Moreover, it cannot be manipulated to generate more profits, as is the case with risk-based regulation, because the tool does not look at the asset or liability composition but at the actual results in terms of the profits that motivate banks’ behavior.

This last observation is important in this period where a different landscape for monetary policy has produced higher rates and enormous potential losses for the banks. A risk-based regulation tries to guess where risks are on the basis of the business model of the banks. This is a very difficult and dangerous exercise because experience has demonstrated again and again that the

connections among banks, markets, products, and industries are so complex that they are not detectable beforehand. Basing the rules on profitability prevents any guessing on risks and behavior, concentrating on their results: profits. Moreover, it also avoids the highly debated dichotomy between micro- and macro-based regulation (Harnay and Scialom 2015) because it targets both.

## **7. CONCLUDING REMARKS**

“From time to time, public policy proposals which once were far out quite suddenly achieve social respectability” (Minsky 1969).

The issue of profitability was, and still is, overlooked by banking supervision. This approach derives from the mainstream idea that profits are a signal of efficiency, an assumption that is not wholly wrong, but simplistic. For instance, a firm that increases its profits by dumping toxic wastes into a river would not be considered more efficient than the competitors that have installed water treatment devices. Often, risky banks dump toxic assets on the financial system before this behavior is understood by public authorities. The main problem is that competition pushes other banks to trade toxic assets as well, so that, when the overall ROA is going up, the efficiency light seems to be flashing, while it is the light of systemic risk. Due to the ferocious unending search for profits, and the consequential financial innovation, banking supervision is gradually left behind. A different approach is needed: “The regulatory and supervisory structure needs not only to adjust with the institutional and usage changes but also to guide the development of apt financial institutions” (Minsky 1994). Even more clearly, Minsky noted that “the function of regulation and supervision is to dominate the endogenous economic processes which make for incoherence once the financial commitments become such that the economy is fragile” (Minsky 1992). We stress the use of the verb “dominate” that is frontally opposed to any idea of light-touch regulation.

After 2008, as in any serious financial crisis, and even more with the pandemic emergency, authorities intervened to stop the panic using pragmatism, instead of relying on the supposedly

effective “market discipline.” The crisis has forced banking supervision to rediscover systemic risk, structural, and macro-prudential measures (Arnold et al. 2012). Although structural proposals such as the Volcker rule or ring fencing are aimed at disentangling national financial systems to reduce financial fragility, results are not remarkable (Tonveronachi 2013). Overall, banks and markets are no less interconnected than they were a decade ago, nor has their dimension receded. Specific rules on individual banks, such as the leverage ratio or the liquidity coverage ratio, are helpful, but they did not change the landscape or the regulatory framework that is still based on micro-prudential supervision (i.e., on methodological individualism, the “banality in orthodox economic analysis” that Minsky put at the roots of policy failures since the 1960s [Minsky 1986a, 332]). Micro-prudential tools are useful to rank the banks (the “risk-based approach”) so that regulators can focus on the riskiest ones (the so-called high-priority banks) but this does not say much on the systemic fragility of the financial system. Moreover, these tools are not able to change the incentives of the top management as far as profitability is concerned. For instance, with Basel 3 the introduction of a leverage ratio and of an output floor for internal models limit the use of RWA to increase profitability, but they do not change the general attitude of top management toward profits. Our proposal of a profitability cap rule can change the incentives of the banks without making hypotheses on the riskiness of different assets or business models. It would allow for significant reduction in the complexity of modern banking regulation (the complete Basel 3 package reaches around 2,000 pages) and for the ability to push the behavior at the micro level and the dynamic at the macro level in the same direction, something that capital ratios are not able to do. A profitability cap rule is even more sensible in the aftermath of the pandemic crisis, where the banking system has had to rely heavily on the public support to survive and in light of the future recapitalizations needed to cope with emerging losses on loans and financial assets.

In this regard, although it is too early to assess where the banking system will be heading after the pandemic and if the banking crises we saw will become a generalized collapse, what is clear is that the public role in the economy will grow considerably. Banks’ assets will be publicly guaranteed or somewhat protected to prevent a credit crunch and a direct intervention is also under way. Since the start of the pandemic, fiscal policies have been used to tackle the crisis, producing a strong increase in public deficit and debt-to-GDP ratios. Central banks too have



reacted promptly, with the Federal Reserve particularly active against the consequences of the pandemic. The Fed has created a whole array of new purchase programs and, March–April 2020 it basically nationalized financial markets, taking on board most of the financial risks in the country. Its balance sheet has grown by trillions in days, giving the central bank a role in the economy greater than during the Great Depression or the Second World War (Timiraos and Hilsenrath 2020). Given this situation, the role of profitability as a signal of banks' efficiency is more relevant than ever. A tool that acts as an automatic stabilizer of profits, like the *map*, could prevent painful quarrels among the industry, public authorities, and the population at large.

This adds to the main pros of our proposal: the *map* is simple, cannot be arbitrated away and it is business-model neutral, meaning a bank can do whatever it wants in terms of strategy and activities, only with limits in its profitability. The *map* may substitute almost every other banking-prudential regulation tool, resulting in a far less complex regulatory framework, making it easier to enforce. Regulatory arbitrage and the endless tug-of-war on the interpretation of this or that specific rule would cease for good. And, finally, even the most pervasive financial innovation would not be able to leave banking regulators behind because its results in terms of increasing profits would find an impassable limit. This is what Minsky meant by *domination* of the economic processes as the function of the financial supervision needed to prevent “it” from happening again.

## REFERENCES

- Admati, A. R. 2012. “Bank Capital: How Much is “Enough?”” Federal Reserve Bank of Chicago 48th Annual Conference on Bank Structure and Competition, Chicago. May 10.
- Admati, A. R., DeMarzo, P. M., Hellwig, M., and P. Pfleiderer. 2013. “Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: why Bank Equity is not Socially Expensive.” Bonn: Max Planck Institute for Research on Collective Goods.
- Albertazzi, U., and L. Gambacorta. 2009. “Bank Profitability and the Business Cycle.” *Journal of Financial Stability* 5(4): 393–409.
- Arcand, J., Berkes, E., and U. Panizza. 2012. “Too Much Finance?” Washington, DC: IMF Working Paper No. 12/161, IMF.
- Arnold, B., Borio, C. Luci, E., and F. Moshirian. “Systemic Risk, Macroprudential Policy Frameworks, Monitoring Financial Systems and the Evolution of Capital Adequacy.” *Journal of Banking & Finance* 36(12): 3125–32.
- Baldo, L. Pasqualone, F., and Scalia, A. 2020. “Repo Market and Leverage Ratio in the Euro Area.” Rome: Bank of Italy Occasional Paper (QEF) No. 551, Bank of Italy.
- Barr, M. S. 2022. “Why Bank Capital Matters.” Washington DC: American Enterprise Institute, 1° December.
- BCBS (The Basel Committee on Banking Supervision). 1988. *International Convergence of Capital Measurement and Capital Standards*. Basel: BIS.
- . 2004. *International Convergence of Capital Measurement and Capital Standards. A Revised Framework*. Basel: BIS.
- . 2010. *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*. Basel: BIS.
- . 2013. *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools*. Basel: BIS.
- Bolt, W., de Haan, L., Hoeberichts, M. van Oordt, M., and J. Swank. 2012. “Bank Profitability during Recessions.” *Journal of Banking and Finance* 36(9): 2552–64.
- Brady, T. 1999. “Balance Sheet, Profitability and Regulatory Developments Affecting US Commercial Banks, 1988 to 1998”, Basel: BIS Conference Papers, Vol. 7, BIS.

- Calomiris, C. W., and Herring, R. J. 2013. “How to Design a Contingent Convertible Debt Requirement That Helps Solve Our Too-Big-to-Fail Problem.” *Journal of Applied Corporate Finance* 25(2): 39–62.
- Chang, M. C., Nieh, C., and Peng, Y. 2011. “Are Bigger Banks More Profitable than Smaller Banks?.” *Journal of Applied Finance & Banking* 1(3): 59–71.
- CGFS. 2015, “Regulatory Change and Monetary Policy.” Basel: Committee on the Global Financial System Papers No. 54, BIS.
- Claessens, S., Coleman, N. and M. Donnelly. 2018. ““Low-For-Long” Interest Rates and Banks’ Interest Margins and Profitability: Cross-Country Evidence.” *Journal of Financial Intermediation* 35(A): 1–16.
- de Guindos, L. 2019. “Euro Area Banks – the Profitability Challenge.” Rome: ABI annual conference “Banking Union and Basel III - risk and supervision 2019”, ABI, 25 June.
- Cohen, B. H. 2013. “How Have Banks Adjusted to Higher Capital Requirements?” Basel: BIS Quarterly Review, September.
- Detragiache, E., Tressel, Th. And R. Turk-Ariss. 2018. “Where Have All the Profits Gone? European Bank Profitability Over the Financial Cycle.” Washington, DC: IMF Working Paper No. 18/99, IMF.
- Durand, P., and G. Le Quang. 2022. “Banks to Basics! Why Banking Regulation Should Focus on Equity.” *European Journal of Operational Research* 301: 349–72.
- El Mehdi, F. 2018. “Determinants of Banks’ Profitability and Performance: an Overview, Munich: MPRA Paper No. 89470.
- Esposito, L. and G. Mastromatteo. 2020. “Profitti, rischi e *capital ratios*: come sviluppare una vigilanza prudenziale neutrale al *risk-appetite* delle banche.” *Moneta e Credito* 73(290): 141–154.
- Federal Reserve. 1999. “Using Subordinated Debt as an Instrument of Market Discipline.” Washington, DC: Federal Reserve Staff Study no. 172.
- Freixas, X. and Rochet, J. 2008. *Microeconomics of Banking*, Boston, MA: The MIT Press.
- FSB. 2023. “Global Monitoring Report on Non-Bank Financial Intermediation 2022”, Basel, FSB. Available at: <https://www.fsb.org/2022/12/global-monitoring-report-on-non-bank-financial-intermediation-2022/>.
- Gambacorta, L., and Karmakar, S. 2018. “Leverage and Risk Weighted Capital Requirements.” *International Journal of Central Banking* 14(5): 153–91.

- Gambacorta, L., and H. Shin. 2016. “Why Bank Capital Matters for Monetary Policy.” Basel: BIS Working Paper no. 558, BIS.
- Gambacorta, L., and A. Van Rixtel. 2013. “Structural Bank Regulation Initiatives: Approaches and Implications.” Basel: BIS Working Paper No 412, BIS.
- Gugler, K., and E. Peev. 2018. “The Persistence of Profits in Banking: an International Comparison.” *Applied Economics* 50(55): 5996–6009.
- Haldane, A. G. 2012. “The Dog and the Frisbee.” Jackson Hole, KA: Federal Reserve Bank of Kansas City’s 36th Economic Policy Symposium, 31 August.
- Harnay, S., and A. Scialom. 2015. “The Influence of the Economic Approaches to Regulation on Banking Regulations: a Short History of Banking Regulations.” *Cambridge Journal of Economics* 40: 401–26.
- Herring, R. J. 2018. “The Evolving Complexity of Capital Regulation.” *Journal of Financial Services Research* 53: 183–205.
- Jordà, Ò., Schularick, M. and A. M. Taylor. 2010. “Financial Crises, Credit Booms, and External Imbalances: 140 Years of Lessons.” *IMF Economic Review* 59(2): 340–78.
- Köhler, M. 2015. “Which Banks are More Risky? The Impact of Business Models on Bank Stability.” *Journal of Financial Stability* 16(C): 195–212.
- Kohlscheen, E., Murcia Pabón, A., and J. Contreras. 2018. “Determinants of Bank Profitability in Emerging Markets.” Basel: BIS Working Papers No. 686, BIS.
- Kregel, J. 1997. “Margins of Safety and Weight of the Argument in Generating Financial Fragility.” *Journal of Economic Issues* 31(2): 543–48.
- . 2008. *Minsky’s Cushions of Safety: Systemic Risk and the Crisis in the U.S. Subprime Mortgage Market*, Economics Public Policy Brief no. 93, Levy Economics Institute, Annandale-on-Hudson, NY.
- . 2012. “Using Minsky to Simplify Financial Regulation.” Annandale-on-Hudson, NY: Ford Foundation and Levy Economics Institute of Bard College.
- . 2014. “Minsky and Dynamic Macroprudential Regulation.” *Moneta e Credito* 67(269): 217–38.
- Kregel, J. and M. Tonveronachi. 2013. “Fundamental Principles of Financial Regulation and Supervision.” Leeds: FESSUD Working Paper no. 29.
- Mahapatra, B. 2012. “Implications of Basel III for Capital, Liquidity and Profitability of Banks.” Pune: National Conference on Emerging Macro Environment, Regulatory Changes and

- Bank Competitiveness, National Institute of Bank Management, 3 March.
- Mastromatteo, G. and L. Esposito. 2016. "Minsky at Basel. A Global Cap to Build an Effective Postcrisis Banking Supervision Framework." Annandale-on-Hudson, NY: Levy Economics Institute of Bard College Working Paper No. 875.
- Meiselman, B. S., Nagel, S., and A. K. Purnanandam. 2018. "Judging Banks' Risk by the Profits They Report." Mimeo. Available at: <https://ssrn.com/abstract=3169730>.
- Menicucci, E., and G. Paolucci. 2016. "The Determinants of Bank Profitability: Empirical Evidence from European Banking Sector." *Journal of Financial Reporting and Accounting* 14(1): 86–115.
- Minsky, H. P. 1959. "On Animal Spirits and the Lure of a Bonanza." Memo. Hyman P. Minsky Archive, Paper No. 259.
- . 1966. "Cash Flow Examination Procedures for Banks." Memo. Hyman P. Minsky Archive, Paper No. 134.
- . 1967. "Suggestions for a Cash Flow Oriented Bank Examination." Memo. Hyman P. Minsky Archive, Paper No. 175.
- . 1986a. *Stabilizing an Unstable Economy*. New Haven, CT: Yale University Press.
- . 1986b. "Global Consequences of Financial Deregulation." Wallenberg Forum, October 2. Hyman P. Minsky Archive, Paper 378.
- . 1992. "Financial Instability and APT Bank Supervision." Mimeo. Hyman P. Minsky Archive, Paper No. 470.
- . 1994. "Issues in Bank Regulation and Supervision." Mimeo. Hyman P. Minsky Archive, Paper No. 72.
- . 1995. "Reforming Banking in 1995: Repeal of the Glass Steagall Act, Some Basic Issues." Mimeo. Hyman P. Minsky Archive, Paper No. 59.
- . 2016. [1982]. *Can "It" Happen Again? Essays on Instability and Finance*. New York, NY: M.E. Sharpe.
- Minsky, H. P., and G. Campbell. 1988. "Getting off the Back of a Tiger: The Deposit Insurance Crisis in the United States." St. Louis, MO: Washington University Working Paper No. 121.
- Paccos, A. M. 2013. "Illiquidity and Financial Crisis." Pittsburgh, PA: University of Pittsburgh Law Review, 74: 383–432.

- Persaud, A. D. 2008. “Sending the Herd over the Cliff.” *Finance & Development*, IMF, Washington, DC.
- Purnandam, A. K. 2010. “Originate-to-Distribute Model and the Subprime Mortgage Crisis.” Washington, DC: FDIC Center for Financial Research Working Paper No. 08.
- Raja, A. 2022. “The Impact of Changes in Bank Capital Requirements.” London: Staff Working Paper No. 1004, Bank of England,
- Rosen, R. J. 2010. “The Impact of the Originate-to-Distribute Model on Banks before and during the Financial Crisis.” Chicago, IL: Federal Reserve Bank of Chicago.
- Ryoo, S. 2013. “Bank Profitability, Leverage and Financial Instability: a Minsky—Harrod Model.” *Cambridge Journal of Economics* 37(5): 1127–60.
- Shan, C., Tang, D. Y., and H. Yan. 2021. “Credit Default Swaps and Bank Regulatory Capital.” *Review of Finance* 25(1): 121–52.
- Stiglitz, J. E. 2010. *Freefall*. New York, NY: W.W. Norton & Company.
- Svoronos, J., and R. Vrbaski. 2020. “Banks’ Dividends in Covid-19 Times.” Basel: FSI Briefs No. 6, BIS.
- Timiraos, N., and J. Hilsenrath. 2020. “FED Breaks Its Taboos To Prop Up Economy.” *Wall Street Journal*, 28 April.
- Tonveronachi, M. 2013. “De-globalising Bank Regulation.” *PSL Quarterly Review* 66(267): 371–85.
- Tooze, Adam. 2023. “We are living through a trillion-dollar rebalancing.” *Financial Times*, March 31, 2023. <https://www.ft.com/content/4d519cc7-5959-4749-a892-dc8bd5cf1014>.
- Trapanese, M. 2019. “L’Agenda del G-20 per la regolamentazione finanziaria: stato di attuazione e principali questioni aperte a dieci anni dalla crisi.” Rome: Bank of Italy Occasional Paper No. 529, Bank of Italy.
- Tymoigne, E. 2009. “A Critical Assessment of Seven Reports on Financial Reform: A Minskyan Perspective, Part I.” Annandale-on-Hudson, NY: Levy Economics Institute of Bard College, Working Paper No. 574.
- Wray, L. R. 2006. “Can Basel II Enhance Financial Stability? A Pessimistic View.” Annandale on-Hudson, NY: Levy Economics Institute of Bard College, Public Policy Brief No. 84.
- Xu, T., Hu, K., and U. S. Das 2019. “Bank Profitability and Financial Stability.” Washington, DC: IMF Working Paper No. 19/5, IMF.

## APPENDIX

### Source and Definitions

The source of our data is the FDIC website (<https://www7.fdic.gov/sdi/main.asp>, and, for the failed banks, <https://www.fdic.gov/Bank/individual/failed/banklist.html>). Data and indicators we used (such as the density ratio and the ROA) are commonly employed and they do not need an explanation with the exception of the efficiency ratio. The FDIC defines it as: “non-interest expense less amortization of intangible assets as a percent of net interest income plus non-interest income,” pointing out that “this ratio measures the proportion of net operating revenues that are absorbed by overhead expenses, so that a lower value indicates greater efficiency” (<https://www.fdic.gov/bank/analytical/qbp/glossary.html>). As it makes no real difference, we excluded the amortization of intangible assets from our analysis, so our efficiency ratio is simply non-interest expense as a percent of net interest income plus non-interest income.

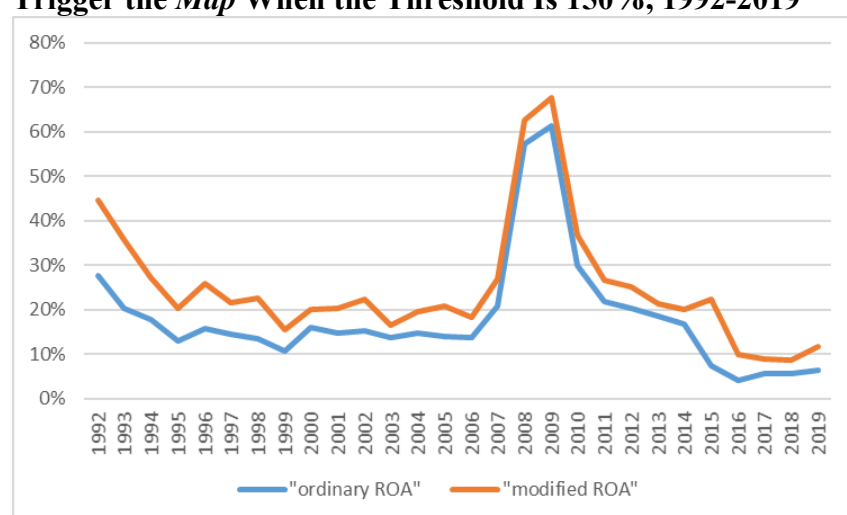
### Possible Tool Refinements

We explained why it is difficult to detect how effective our profitability cap is as a micro-prudential tool. Here we only give some ideas on (three) possible technical refinements of the proposal.

The first is about the measurement of the threshold. We used a fixed threshold (a percentage of the ROA), but the threshold can be made more advanced using the statistical distribution of ROA (for instance the standard deviation) although the results would be very similar. Moreover, we may use a measure based on a moving average, as it is common in the technical analysis; however, these techniques are useful in a context of copious information (daily or even intra-day data). In our case, it would be difficult to get frequent results because data for financial statements are only prepared quarterly. Another way to make the threshold more refined is to try to neutralize the effect of a genuine higher efficiency. We can take into account the efficiency of the bank,  $i$ , when its efficiency ratio,  $e$  (defined as above), is better than the average (i.e.  $e_i < \bar{e}$ ) multiplying its ROA by  $[1 - (\bar{e} - e_i)]$ . In practice, a bank that is more efficient than the average,

receives a discount on its ROA. Let's make an example. A bank has a ROA of 2 percent and an efficiency ratio of 55 percent when the average efficiency ratio is 60 percent (i.e., the bank is more efficient than the average by 5 percentage points). Then, the ROA of the bank to be used for the comparison with the average ROA is no more 2 percent, but  $2\% \times [(100\% - (60\% - 55\%))]$ , i.e., 1.9 percent. Even if this modification is fair to the well-managed banks, overall it does not make a great difference, as we can see in the next figure where we used the 150 percent threshold as example:

**Figure 10. Proportion Of Assets Connected to US Banks Whose ROA and Modified ROA Trigger the *Map* When the Threshold Is 150%, 1992-2019**



Source: FDIC

Secondly, a more precise proposal would be to apply the *map* on a national or business-line level (for instance, with a different threshold for every country or for different business line, as it happens with the measurement of operational risk in the Basel 2 framework). This is because bank profitability in some economies has been structurally higher (Albertazzi and Gambacorta 2009; Guler and Peev 2018), as is also the case in some business lines and, thus, the tool should be as neutral as possible. The trade-off here is between simplicity and precision. Different thresholds would create an incentive for banks to modify their behavior to minimize the regulatory burden. For instance, a bank that operates in many countries, could originate the credit in the country with the highest threshold, to increase its regulatory maximum profitability. Given the back-to-basics movement in banking regulation, we think a simpler framework is preferable.



The third point is the possible synergy with other regulatory tools. Given that the profitability cap is able to change banks' behavior, it could substitute almost all other prudential rules (capital ratios, liquidity ratios, leverage ratio, organizational rules and so on), but to be effective, it should be combined with the size cap already discussed. Together, they could structurally stabilize the banking system, because they would totally change the banks' incentives. Both caps, ultimately, have the same goal: to reduce profit growth that is based on bigger banks and more profitable assets.