

**Giuseppe Mastromatteo**, is professor of Economics at the School of Economics of the Catholic University of Milan. He collaborates with the Laboratory of Monetary Analysis of the Catholic University and with the Inter-University Centre on Growth and Development. He is a member of the Steering Committee of "EconomEtica" (Inter-University Centre for Ethics and Social Responsibility). He has published several articles in the fields of monetary and public economics. More recently, his areas of research are focused upon the economics of globalization and the main topics of the relation between ethics and economics.

Largo Gemelli, 1 20123 Milano Italy  
tel. +39 02 7234 2442  
fax +39 02 7234 2976  
e-mail [giuseppe.mastromatteo@unicatt.it](mailto:giuseppe.mastromatteo@unicatt.it)

**Lorenzo Esposito**, works for the Bank of Italy, Milan Branch in the field of banking and financial supervision. He collaborates with Catholic University of Milan doing research and didactic activity concerning monetary policy and the theory of banking regulation. He has published many articles on international banking and banking supervision.

Via Cordusio, 5 20123 Milano  
e-mail [lorenzoxesposito@yahoo.it](mailto:lorenzoxesposito@yahoo.it)

## **Minsky at Basel: how to build an effective banking supervision framework after the crisis**

by

Giuseppe Mastromatteo  
Istituto di Politica Economica  
Università Cattolica del Sacro Cuore  
Milano

Lorenzo Esposito<sup>1</sup>  
Banca d'Italia  
Sede di Milano

The financial crisis that assailed world economy in 2007 has demonstrated, among many things, the hopeless inability of mainstream economics to lay the ground for an effective banking supervision framework. Authorities are proceeding with a pragmatic approach, waiting for a new scientific paradigm to help. However, as soon as the massive public intervention succeeded in taming panic, Wall Street recovered in terms of profits and cold blood, excluding any possibility of a serious banking reform. This also means that a strong and possibly even bigger financial crisis is inevitable later on.

We think an overall alternative is needed and at hand: the Minsky's theories on investment, financial stability, the growing weight of the financial sector and the role of the State. Building on this legacy it is possible to analyze what works in the post-2008 reforms, starting with Basel III, and what is missing. We will show that, although posed in the right direction, these reforms cannot change the banking landscape and they can be easily reversed. This is also due to the extraordinary political power of big banks. We will argue that there is no solution to this situation apart from an international absolute size cap for banks.

**JEL:** E12, G01, G28

**Key words:** banking regulation, financial stability, Minsky, Basel 3

---

<sup>1</sup> The views expressed are those of the author and do not involve the responsibility of the Bank of Italy.

## 1. Introduction

The financial crisis that, with ebb and flows, is plaguing world economy since 2007 has produced many famous deaths. Among them: the mainstream policies, included those coming from an emasculated version of Keynesian economics (the world of market imperfections), Basel II and the light-touch regulation approach in general, the idea that more public intervention by government and central banks means inflation and finally, the idea that concentration of income and wealth is good for growth.

However, in contrast with the Benjamin Franklin dictum, these deaths are not certain. As soon as public intervention succeeded in taming panic, Wall Street recovered in terms of profits and cold blood. This excluded any possibility of a serious reform of the financial system. This also means that a strong and possibly even bigger financial crisis is inevitable later on.

As a tornado does with a terrain, the crisis helped to unearth what Keynes called the underworld, especially Minsky. Unfortunately, Minsky is following the fate of financial reform back to the limbo. Before serious reforms and Minsky's theories are handed back to the historians of economic thought, and also before a new crisis comes to shatter world economy, we think it is time to assess thoroughly what are the many contributions that Minsky can give to banking supervision.

We will try to show that Minsky's theories can rebuild the understanding on how modern capitalism works in terms of trend and cycles, the role of finance, the role of the State and last but not least how to create an effective banking supervision.

## 2. The main trend of world financial system. A decalogue<sup>2</sup>

*We live in a world that is more financialized than ever before - A. M. Taylor*

In the years that prepared the crisis, every data on finance and banking confirmed the growing and positive role of big banks on world economy although this could not find a place into the theoretical orthodox framework. It is even too easy now to note how naïve and dangerous was this lack of understanding and now the consensus goes into reverse (Cecchetti and Kharroubi, 2015). It also means that is crucial to propose an alternative based on the main trends of the world as it is. To start, we will touch a dozen of aspects we deem the more relevant and we will show their links. This will allow us, later on, to propose a theoretical alternative.

First of all we start with the general growth of the financial system that introduces us to the general picture. Among many, we take two citations:

“The defining feature of financialization in the U.S. has been an increase in the volume of debt...between 1973 and 2005 total debt rose from 140 to 328.6 percent of GDP. Financial sector debt also grew much faster than non-financial sector debt, so that financial sector debt rose from 9.7 to 31.5 percent of total debt over the same period.” (Palley, 2007)

“Several decades of deregulation and innovation grossly inflated the size of financial markets relative to the real economy. The value of all financial assets in the US grew from four times

---

<sup>2</sup> In this work, although not technically precise, we will use financial and banking regulation/supervision indifferently. Moreover, with “Basel II” and “Basel III” we will mean the general state of banking supervision before and after the crisis.

GDP in 1980 to ten times GDP in 2007. In 1981 household debt was 48% of GDP, while in 2007 it was 100%. Private sector debt was 123% of GDP in 1981 and 290% by late 2008. The financial sector has been in a leveraging frenzy: its debt rose from 22% of GDP in 1981 to 117% in late 2008. The share of corporate profits generated in the financial sector rose from 10% in the early 1980s to 40% in 2006, while its share of the stock market's value grew from 6% to 23%.” (Crotty, 2008)

This trend was accelerating before the crisis: “In the five-year period covering 2002–2007, the ratio of debt to national income in the United States increased from 3.75:1 to 4.75:1” (Acharya et al., 2010) and has continued even after (Dobbs et al., 2015). The staggering credit and financial growth outpaced enormously the general economic growth:

“For the WTO, the international transactions on goods and services increased 11 times from 1977 to 2007. During the same years financial transactions in foreign exchange markets grew at a much higher rate than international trade. They increased 175 times if we only include traditional products and 281 times if we add derivative contracts on exchanges and interest rates” (Panico et al., 2012; see also Haldane et al., 2007).

Against this general picture, there are specific important trends.

*The banking system is more and more concentrated.* This is true in absolute terms and vis à vis the economy as a whole (Demirguc-Kunt and Huizinga, 2011). This also means that big banks grow against other banks (Ötoker-Robe et al., 2011). For instance, in 1983 only one US bank had total assets of more than 3% of GDP, in 2007 they were 9 and the crisis meant that they now are fewer and bigger (Johnson and Kwak, 2010). This is also true globally: “In 1990, assets of the top 25 global banks totaled almost USD 7,000 billion, which accounted for about 30% of the worldwide GDP. Just before the start of the present financial crisis, their total assets came to almost USD 40,000 billion, 70% of the worldwide GDP” (Knot and van Voorden in Dombret and Lucius eds., 2013<sup>3</sup>). Among other factors, concentration was helped by deregulation and technological advances (Laeven et al., 2014).

This tendency has also implication for income distribution as Minsky (1990) pointed out: “A highly centralized system with a few big banks is not desirable if the aim is to achieve a wide distribution of wealth and a multiplicity of independent economic agents”.

*General growth and concentration were helped by the stance of banking supervision.* Bigger banks were considered more stable because they had a more diversified business, a better organization and less risks (Johnson and Kwak, 2010) justifying a friendly regulatory approach that meant a higher financial leverage (Haldane 2009a) and pushed all the banks in the same direction so that “In essence, the financial network has over time become progressively more complex and less diverse” (Haldane, 2009c). In this picture, OTD model was considered good as it pushed risks outside the banks' balance sheets (Meyricke in eds. Dombret and Lucius, 2013). In general, financial risks were passed from banks to the final consumers and this was considered efficient. It was not. Of course deregulation was not a “free choice”, it was forced by the sheer size (and then economic and political weight) of finance. In fact, when policy-makers chose stability over innovation, it worked well for the States (Haldane, 2010) but not for banking profitability in the long run.

*Financialization and globalization yielded unprecedented inequality in income and wealth*

---

<sup>3</sup> See also Kaufman, 2002, Ötoker-Robe et al. 2010, Scherer, 2010, Shull, 2010 and Haldane 2010.

*distribution.* The possibility to use the world population as a single labour market had decreased wages with also a downtrend of economic growth (Palley, 2007, see also Travaglini, 2009, Rajan, 2010 and OECD 2014). This has also had negative effects on the social mobility (Wilkinson and Pickett, 2009, see also Turner, 2012, Hein 2013 and Kumhof, Rancièrè and Winant, 2015). It is now acknowledged that financialization and income distribution are linked:

“Industrial and post-industrial economic systems are characterized by two unambiguous phenomena which are at the center of discussions on the current crisis: the increase of the profit share over the past thirty years and the increased degree of ‘financiarisation’ of the economic systems” (Bellino, 2010).

The financialization is not understandable in the mainstream theoretical picture (Radde, 2012); on the contrary, Minsky pointed out that “All too often the banking and financial system is an instrument that promotes inequality” (Minsky, 1990).

Inequality was helped by fiscal policies and labour market deregulation (Alvaredo et al., 2013). Upwards redistributing fiscal policy does not mean only a change in the tax rates but also the growth of tax havens, legalizing loopholes and so on (Strange, 1996). As we saw, deregulation too had a deep impact on income distribution (Nowotny in Dombret and Lucius eds., 2013; see also Korinek and Kreamer, 2014). To the collapse of wages was added the collapse of public pensions that meant a growing role for private pension schemes. The growth of “institutional investors” played an important role in inflating bubbles while reducing the public resources (Toporowski, 2000). A lower wage meant a dramatic drop in personal saving and the surge in personal debt, two crucial developments to foster financial instability (van Treeck, 2013, see also Atkinson and Morelli, 2010). Reducing the saving gap to financial illiteracy – as mainstream economics does – is a nonsense (French et al., 2010). OTD model also contributed to inequality via financialization and growing banks’ profits (Lapavitsas, 2008).

The data forced economists to go back to a Minskyan explanation of the link between inequality and financial stability: “the concomitant rise in inequality and financial fragility may be due to coincidence rather than causality” (van Treeck, 2013), but Minsky explained the key point of the issue: capitalism can survive any inequality as long as the latter does not trigger instability, however, financialization does exactly this (Minsky, 1990).

*Globalization, concentration and deregulation brought about a reduction in the diversity of the operators and in the possibility to diversify risks.* It has been noted that “Globalization leads to much closer correlation among markets in different countries and different asset categories” (Pozen, 2010, p. 338). Market co-movements are increasing (BOE, 2010, IMF, 2011) and there is evidence of a “declining trend in the cross-country dispersion of equity premia worldwide” (De Nicolò in Evanoff et al. eds., 2009, p. 86). This trend is strictly linked to the rise of big banks. The more they diversify the more similar become:

“Banks’ balance sheets, like Tolstoy’s happy families, grew all alike. So too did their risk management strategies. Financial firms looked alike and responded alike. In short, diversification strategies by individual firms generated a lack of diversity across the system as a whole” (Triana, 2009)<sup>4</sup>.

From an individual firm perspective, these strategies looked sensible, but for the system as a

---

<sup>4</sup> See also <http://economistsview.typepad.com/economistsview/2013/02/the-case-for-and-against-too-big-to-fail-banks.html>.

whole they generated a greater fragility (Haldane, 2009b). More concentration then means a higher systemic risk (Wagner, 2010). So much for the benefits of financial innovation in the diversification of risks, included the OTD model (Evanoff et al. eds., 2009).

*Globalization, concentration and deregulation mean also growing interconnections among banks.* The mechanism is the following:

“Any asset portfolio is, in essence, a financial network. So the balance sheet of a large financial institution is a network, with nodes defined by the assets and links defined by the correlations among those assets. The financial system is similarly a network, with nodes defined by the financial institutions and links defined by the financial interconnections between these institutions” (Haldane 2009b)

The most dangerous aspect is that the complexity of the networks is such that the true interconnectedness among banks is not visible beforehand (Kohn, 2009). So the system produced banks that “are not only too big to fail but, in having important relationships with a large number of other institutions, are also too interconnected to fail” (BIS, 2009, p. 120). And yet, although a small club, SIFIs cannot cooperate to save themselves when things get messy, as the Lehman Brothers fiasco showed conclusively (Sorkin, 2009).

*The bigger the bank the bigger its political power.* Many commentators underlined that big banks were saved not only for economic reasons. Big banks nowadays are political powerhouses: “The financial services industry is now the most powerful political force in Britain and the US” (Kay, 2009).

This power is reflected everywhere. Public servants and ministers are very close to big banks. Wall Street can use, of course, the sheer power of money (i.e lobbying), but it can count on an even more powerful weapon, the cultural hegemony, the idea that what is good for Wall Street is good for the US (and the world). In a sense, this is even worse than open corruption:

“the American financial industry gained political power by amassing a kind of cultural capital—a belief system. Once, perhaps, what was good for General Motors was good for the United States. In the last decade, the attitude took hold in the U.S. that what was good for Big Finance on Wall Street was good for the United States. The banking and securities industry has become one of the top contributors to political campaigns, but at the peak of its influence it did not have to buy favors the way, for example, the tobacco companies or military contractors might have to. Instead, it benefited from the fact that Washington insiders already believed that large financial institutions and free-flowing capital markets were critical to America’s position in the world.” (Stiglitz et al., 2009)

This is well witnessed in the transformation of parties like the US Democrats or the UK Labour Party. For instance, the Clinton administration was completely ruled by Wall Street ideas (Rubin, Summers) and the few that dared to object (as Reich) were dismissed (Johnson and Kwak, 2010). As for the LP, in the 70s: “The left in the British Labour Party was able to secure the passage of a conference resolution to nationalise the big banks and insurance companies in the City of London, albeit with no effect on a Labour government that embraced one of the IMF’s first structural adjustment programmes. We are still paying for the defeat of these ideas” (Panitch, 2009). The Blair-Brown governments were a case study of Wall Street (or better the City) rule on public policies. This reversed centuries of distrust in the banking system. For instance, the US had a long tradition of famous politicians that were enemies of big banks (Jefferson, Theodore Roosevelt, etc., see Johnson e Kwak, 2010). FDR succeeded in reducing the power of Wall Street

for half a century. Now banks have the upper hand and no politician with a career to defend dares to defy them.

At lower level of the administration the “revolving door” system meant that almost every important public servant who is in charge of banking regulation is a former Wall Street manager, a situation mocked as “Government Sachs” (Sorkin, 2009)<sup>5</sup>. Wall Street has molded their minds. This cultural hegemony had many effects. First of all the strong competitive advantage of being big means that the “empire building” was the name of the game (Moosa, 2010). Achieving the status of too big to fail was decisive and the immediate profitability was irrelevant to the merge. The size was a way to acquire power (Berger et al., 1999). Moreover, the bigger the bank the heftier the top management’s bonus. The culture of big bonuses was so ingrained that it resisted the aftermath of Lehman Brothers. In 2008 Wall Street, saved by public money, paid \$ 18.4 billion of bonuses, 6 out of 9 banks saved by public money paid more bonuses than they made profits in the year (Pozen, 2010). How true that, as Hoenig stated, “So long as you have too big to fail, you will have oligarchies”.

The new State-banks relationship can be also seen in the fate of failed management. After the SS&LL crisis a thousand of managers were jailed; after the collapse of 2008, not a single one (Wray, 2011c). It is because with the subprime crisis no rules were violated but this only confirms who inspires the laws nowadays.

Deregulation and public policies in general helped the trend. This was a vicious circle: “The big banks in this country became much more powerful in economic terms and political terms with deregulation in the 1980s, the arrival of new technologies particularly derivatives in the 1990s. And they plowed this political influence back into further deregulation” (Stiglitz et al., 2009). In many ways, deregulation rewarded recklessness (Panico et al., 2012). Paradoxically, the burden of regulation played the same role, because the compliance costs have a big fixed costs component, so the more complex the regulation, the higher the minimum size to compete.

All in all, nowadays big banks rule the roost and they do it for their own good. In contrast with the traditional economic wisdom, financial sector cannot be left to the invisible hand because banking is impossible without the State: “The idea that banking systems can exist outside a system of government regulation is simply a libertarian fairy tale” (Calomiris and Haber, 2014). In fact even mainstream economics acknowledged big banks anti-social behaviour: “At the highest level, there is a conflict of interest between society as a whole and the private owners of financial institutions...The result is privatized gains and socialized losses” (French et al., 2010, p. 18; see also Lastra and Wood, 2010). Therefore, as disposing of private property altogether seems too extreme, the only solution is to contain the big banks: “the advice from those with experience in severe banking crises would be just as simple: break the oligarchy. In the U.S., this means breaking up the oversized institutions that have a disproportionate influence on public policy.” (Stiglitz et al., 2009).

*The basic tenets of mainstream economics were hopeless.* Many hypotheses of the orthodox paradigm were weak and the weakest point was the micro-foundation bias, the idea that if something is good for a bank, this yields automatically a better general outcome (Skott, 2012). Unfortunately, the world is not Arrow-Debreu compliant. The confusion between micro and macro arguments is obvious also in the field of how banks work (Jakab and Kumhof, 2015). This had also consequences for the assessment authorities made of them, as Goodhart pointed out:

---

<sup>5</sup> For a recent scandal see: <http://www.vox.com/2014/9/26/6849287/federal-reserve-fed-goldman-sachs-this-american-life-carmen-segarra>.

“The implicit idea was that if you made all banks copy the principles of the best, then the system as a whole would be safe. Hardly anyone critically examined this proposition, and it turned out to be wrong” (Goodhart in Turner et al., 2010). Micro-macro transposition failed also because it entails statistical independence: “these models assumed statistical independence. They would not work if everyone used them” (Persaud, 2008). This meant that what was considered impossible actually occurred, and the world economy is still paying for these wrong assumptions:

“Back in August 2007, the Chief Financial Officer of Goldman Sachs, David Viniar, commented to the *Financial Times*: “We are seeing things that were 25-standard deviation moves, several days in a row”. To provide some context, assuming a normal distribution, a 7.26-sigma daily loss would be expected to occur once every 13.7 billion or so years. That is roughly the estimated age of the universe. A 25-sigma event would be expected to occur once every  $6 \times 10^{124}$  lives of the universe....Fortunately, there is a simpler explanation – the model was wrong.” (Haldane, 2009b).

Technical complexity induced self-complacency for wrong: “Banks and CRA used very complicated mathematical models but that was nothing similar to science. It was beauty contest all along. For instance: “triple-A ratings only represented 1 percent of Fitch ratings of corporate finance products in contrast to roughly 60 percent of global structured finance products” (Brancaccio and Fontana, 2011). This also explain why the idea that “the markets” know better (than regulators) is simplistic. For instance, Yellen (1996) noted: “As supervisors, not practitioners, we can never hope to be truly on the frontiers of credit risk practice”. In reality, “frontier” is another name for beauty contest.

The model risk would have been a problem anyway, but concentration and deregulation increased it enormously. The former because reduced the diversity among risk management styles and models, the latter because encouraged banks to use risk management to increase profitability. When market standards became regulatory standards, model risk became a lethal danger for banking supervision: “we cannot use risk models that rely on market prices as the instruments of financial regulation. Market prices cannot save us from market failures. Market prices do not predict market crashes; if they did crashes would not occur” (Persaud, 2008). The Basel Committee accepted internal model because they were more advanced and efficient than the standard regulatory ones. What was not understood beforehand is that micro-efficiency can provoke an increase in overall financial fragility. Systemic risk was not an issue before the crisis. Macro-prudential supervision and liquidity risk are barely mentioned before 2008 in the international regulation. This had direct dire consequences in the micro-prudential supervision too:

“The Financial Services Authority, which was widely regarded as one of the most effective, forward-looking supervisory authorities in the world, provided an especially egregious example with regard to its oversight of Northern Rock. Just weeks before the bank collapsed, supervisors authorized it 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)

When finance becomes “too much” for the economy to handle, micro-prudential supervision becomes useless or even harmful (Arcand et al., 2012).

*Systemic risk is increasing.* More and more banking concentration means higher and higher systemic risk. This is a fundamental issue and one that cannot easily fit in mainstream economics, where everything is “micro” and systemic is tantamount to unscientific. At most, “systemic”



could be referred to the payment system (Crockett, 1997). Indeed the efforts to reduce this source of systemic risk have been strong and rewarding: during the crisis the payment system was never an issue.

After the crisis everything changed. There is a great effort to understand it. This means the need for data (Cerutti et al. 2012), how to measure it (Tarashev et al., 2010, Acharya et al., 2010), how to connect it to micro-foundations (Bijlsma et al., 2010) and so on. Economists are now aware of what seems a paradox: the more risks are diversified the more interconnected are the banks the higher the systemic risk (Battiston et al. 2012). This is also true for derivatives or the process of securitization that while allow for a more efficient risk management also increase systemic risk (Evanoff et al. eds., 2009).

In many sense, the momentous return of systemic risk should make the micro-foundation approach extinct. As Levin noted: “A popular fascination of theorists in all disciplines, because of the potential for mechanistic understanding, has been with systems in which the dynamics at one level can be understood as the collective behavior of aggregates of similar units.” That is an appealing mechanism, if it was true. But it is not true for the financial system or the economy as a whole. The economy is a network of heterogeneous, not similar, agents” (cited in VV AA, 2007). Stiglitz (2010, p. 149) raised the same point in practice:

“even if a given bank was managing its own risks well, that doesn’t address *systemic* risk....If all banks use similar models, then a flaw in the model would, for instance, led all of them to make bad loans – and then try to sell those loans at the same time. And that is precisely what happened”.

We need a complete reversal of the theoretical connection between micro and macro, a “macrofoundation of microeconomics” as Bellofiore and Ferri (2001), observed about Minsky’s analysis<sup>6</sup>.

A particular mistake made by regulators was the lack of understanding of the role of financial innovation and deregulation in fostering systemic risk (Galati and Moessner, 2011, see also Kling, 2009). Authorities were so scared that they went full circle from micro to macro (Basel III vs Basel II, see below) and also many economists propose to reduce regulation to macro-prudential supervision (Brunnermeier et al., 2009).

*The role of innovation is to give a boost to profitability but more profits inevitably mean more risks.* Innovation is a way to escape competition as Adam Smith explained long ago. As the “new” (sector, product, procedure, asset, “the new” for short) is more profitable, competitors start to flock (band-wagoning). The speed of this process depends on regulatory restrictions. Therefore, deregulation helps innovation but also instability (Loranth and Sciubba, 2000 and Laeven et al., 2014). This is the paradox of profitability the classical economists had in mind: for the single firm innovation makes perfectly sense as it entails higher profits, but when it spreads, the rate of return of the “new” converges to the average rate, forcing further innovation. Innovation is together necessary and self-defeating. Innovation cycles means also bubble as they imply rapid increase in the investment in the “new”. Innovation and instability are one and the same thing, as Thakor (2010) put it, crises can be prevented only if financial innovation is avoided too.

---

<sup>6</sup> It is worth noting that there are economists that, while being sympathetic to Minsky’s ideas, underline that its financial instability hypothesis is a micro-theory that cannot be passed to a macro analysis (for instance, Passarella, 2012), although others have replied to their critiques (for instance, Caverzasi, 2013).

The link between innovation, competition and instability is not lost for mainstream finance theory. Although the general message is that innovation is good to overcome bad-designed regulation (Merton, 1995, Tufano, 2002, Stiroh and Strahan, 2003), many studies underline the danger coming from innovation in terms of instability (Bolt e Tieman, 2004, Boyd et al., 2006, Jiménez et al., 2007, Boot and Marinč, 2007 and Berger et al., 2008). There are many trade-offs, as Allen and Gale (2004) put it:

“Competition policy in the banking sector is complicated by the necessity of maintaining financial stability. Greater competition may be good for (static) efficiency, but bad for financial stability. From the point of view of welfare economics, the relevant question is: what are the efficient levels of competition and financial stability?”

The most important message here is that the stance of regulation cannot be taken as exogenous. It is connected to profitability: banks need to overcome the slowdown of profitability so they turn to innovation (Kregel, 2012). Regulatory innovation is part of this general process (Boz and Mendoza, 2010). Innovation boosts profitability thus sparking bubbles. Banking regulation as every part of the financial system is by its nature pro-cyclical. Many commentators observed it also before the crisis but only in specific contexts (the loan to value ratio is pro-cyclical, credit rating standards are pro-cyclical and so on, see, for instance D’Amato and Furfine, 2004, Kashyap and Stein, 2004, Fostel and Geanakoplos, 2008 and Van Roy, 2008). That regulation worsens the pro-cyclicality of the system was also common knowledge (Taylor and Goodhart, 2004, Gordy and Howells, 2006, Repullo and Suarez, 2008, Drehmann et al., 2010 and Miao and Wang, 2014). Moreover, it was also acknowledged that regulation is biased in favour of big players (Strange, 1996), even if, paradoxically, these firms are the smartest in regulatory avoidance (Kane, 1981). As profitability is attacked by competition, and innovation and deregulation are the inevitable consequences, the only assured thing about financial regulation is that it will be overwhelmed (French et al. 2010) as also Minsky said. We will come back to this important issue.

*Innovation yields commoditization and vice versa.* The cycle cited above (downward pressure on profits-innovation-bubble-crisis) is also connected to a commoditization trend. When the new is no more so new because innovation has generalized, it becomes a commodity driving down profits (Merton, 1995). An example:

“Ken Moelis, a veteran banker who now runs his own firm, recalls that when he started in the industry in 1981 at Drexel Burnham Lambert, a firm that pioneered the high-yield bond market, “there wasn’t another firm in the world that knew how to price a junk bond,” so issuing and trading them was enormously profitable. These days, he says, they can be traded and their prices discovered electronically down to three decimal places” (*The Economist*, 5<sup>th</sup> November 2013)

If we start from the assumption that risks (and uncertainty) are needed to bring profits, it becomes obvious that finance needs risks (among many: Lapavitsas, 2008, Rajan, 2010, Acharya et al., 2010). As Haldane (2010) explained: “Finance theory tells us that risk brings return. So there are natural incentives within the financial system to generate tail risk and to avoid regulatory control”.

In the final stage of the cycle, when the new activity is completely standardized and the return it yields low, competition induces reckless behaviours. For instance, just before the crises debt issuers shopped for a better rating among CRAs (Pozen, 2010) and financial advisors used sex to

sell subprime mortgages<sup>7</sup>. The fiercest and ruthless competition is a warning that the bubble is coming to an end:

“Nothing is more dangerous than a good idea. That ominous generalization seems inescapable given the development of finance over the past 40 years. Time and again, business has seized upon a new idea—junk bonds, LBOs, derivatives—only to push it far past its sensible application to a seemingly inevitable disaster. (Pare, 1995, p. 197).

Moderation is definitely not the name of the game. Banking supervision should reflect this basic aspect.

*Profitability is the northern star of the system.* Every trend we have commented so far (concentration, innovation, deregulation cycles and so on) can be brought back to profitability.

In particular, the cycles lowering of profits/deregulation yielding innovation/bubble/commodification and then crisis/re-regulation explain the finance system of at least the last couple of centuries. When profits are good, there is no need for innovation and deregulation (Johnson and Kwak, 2010), but when returns are falling, everything is attempted. For instance, the re-regulation after a crisis can hamper profitability for a while. It is true that as this trend is true for every bank, competition is not modified, anyway declining ROE will produce nervousness in the top management (BIS, 2011). One can argue that the lowering of interest rates and other public policies are easily explained in terms of profitability: “The gains risk being privatised and the losses socialised. Evidence suggests this is a repeated historical pattern” (Haldane, 2009a). Another example is the composition of banks liabilities. If still in the 70s, it was fairly normal for a big bank to have 20% of its balance in very liquid assets, the decline was very strong until the crisis (BOE, 2010, p. 34) and this was allowed by a milder and milder banking regulation. More generally, economic policies cannot be understood without considering the profitability trends. This is true for fiscal and monetary policy as well as for market regulation. When we discuss how to better regulate the banks this issue cannot be overlooked.

We should also remind that the relative power of the different sectors of the economy is measured, basically, from their size in terms of profits. Not by chance there is an historical trend to an increase of financial profits as a share of total profits (Guttmann and Plihon, 2010) that is difficult to link to a “superior” efficiency of big banks. A higher ROE was linked to a higher leverage instead as big banks accrued more losses than the other (Goldstein and Veron, 2010). In other terms profits entail more weight on the State decisions and vice versa.

*Who pays for the crisis? Financialization rewarded unfairness.* It is difficult to assess an exact economic impact of the crisis (many have tried anyway, as we will see). For sure, it is impossible to talk about profitability and efficiency of banks when the States were forced to use trillion of dollars to save them.

The scale of intervention is without historical precedent. In the 80s, the GAO estimated the cost of SS&LL crisis at \$ 150 billion, a figure that was considered outrageous (Hetzl, 1991). After 2008, this figure seems *argent de poche*. Although it is difficult to put together different policies expenses (for instance, direct recapitalization, lending of last resort, implicit guarantees and so on), the numbers are astounding. We give some example.

US and EU banks from 2008 to 2011 were forced to raise \$ 1.4 trillion of new capital (Brei et al.,

---

<sup>7</sup> <http://www.bloomberg.com/bw/stories/2008-11-12/sex-lies-and-subprime-mortgages>.

2011), that is about the Spain GDP. Haldane (2009a) estimates the cost to save these same banks in \$ 14 trillion, “or almost a quarter of global GDP”. Estimates to mend the crisis as a whole are even higher: \$ 24 trillion for the US government (Johnson and Kwak, 2010) and \$ 19 trillion for US households, or “almost two decades of accumulated prosperity” (Better Markets, 2012, p. 33). For the whole world the figure is 60-200 trillion (Dombret, in Dombret and Lucius eds., 2013).

It is obvious, comparing the scale difference between total costs and the recapitalization of the banks, that if the big banks had been called to shoulder the real costs of their actions they would be bankrupt even if the costs have been distributed along their profits of all history. But it is also important to point out that the States give an indirect subsidy to big banks even during good times (Haldane, 2010, see also sec. 7). Even without considering the implicit subsidies like deposit insurance and the possibility to tap central bank money, these data show that using real costs of banking, this activity is not profitable as it seems. Probably, it is not profitable at all.

### **3. Bubbling banks**

Mainstream economics has always denied, in its core intuitions, the special nature of banks (for instance, Freixas and Rochet, 2008). This shortcoming did not seem relevant because a smaller and smaller role of the banks as a result of *disintermediation* was deemed inevitable, a tendency assigned to different causes over time but all converging to the outcome of a diminishing importance of the banking industry (Marotta and Pittaluga eds., 1993). Banks, for their part, did not seem impressed by this *memento mori*, and insisted to grow in size and power. We will analyze here the cultural environment that contributed to the crisis especially for its consequences on banking regulation.

#### **3.1 The cultural side of the bubbles**

*Let all the dreamers wake the nation* – Carly Simon

The flourishing of bubbles always came with a cultural and scientific optimism bordering with mindless drunkenness. This was true since at least the end of XVII century. The process of financialization of the economy produced bigger and bigger bubbles and hence wilder and wilder cultural and scientific euphoria. This should be thoroughly understood in its true content in order to be able to propose a new regulatory framework. A bubble is connected to the aforementioned cycle related to something new. Galbraith (2001, p. 250) explains:

“The more obvious features of the speculative episode are manifestly clear to anyone open to understanding. Some artifact or some development, seemingly new and desirable ...captures the financial mind or perhaps, more accurately, what so passes. The price of the object of speculation goes up...This increase and the prospect attract new buyers; the new buyers assure a further increase. Yet more are attracted; yet more buy; the increase continues. The speculation building on itself provides its own momentum”

To escape the downward trend of the established sectors something new is introduced. Business cycles are investment cycles and investment cycles are connected to bubbles (Shiller, 2009). The bubble starts because the new yields a higher risk-weighted profit rate. Like the beginning, also the end of the bubbles is always the same:

“For built into this situation is the eventual and inevitable fall. Built in also is the circumstance that it cannot come gently or gradually. When it comes, it bears the grim face of disaster. That is because both of the groups of participants in the speculative situation are programmed for sudden

efforts at escape” (Galbraith, cit., pp. 250-251)

If the birth and the death of bubbles is unmistakably similar, their lifespan is unpredictable. Nobody knows for how much a bubble will run because it depends on how much investors keep coming in. This means that the only mechanism that explains the bubbles is the beauty contest. This was understood well before Keynes<sup>8</sup>. Since at least the Tulip mania, these phenomena are not only similar in their economic mechanisms but also in every other aspect that connotes the bubble and can be called the “This time is different” syndrome. As the timespan of a bubble depends crucially on the beauty contest, this behaviour is completely rational. To be maniac is rational provided that many others keep the mania going.

The mania affects everything. Universities, authorities, media (Toporowski, 2010). Even in the cultural products (like movies and tv-series) there is a growing role for a romantic depiction of swindlers, thieves and so on. This cultural domination is more pervasive than the direct corruption of governments and media, although, needless to say, it helps having friends in the government and authorities and this is assured by the revolving doors that implies that the intellectual outlook of important people are aligned to Wall Street’s. The main component of this outlook and the basic idea behind monetarism and globalization, is the idea that the State, and whatever is public, is not relevant or not useful and the finance should be left alone to lead the planet (Strange, 1996).

The bubble atmosphere includes the idea that there is something completely new and different from the past and that who doesn’t understand it must be silenced or marginalized. We can call it the survival of the blindest. Who is not ready to cheer should be ready to leave or at least to be quiet. During the bubble everyone that opposes the mania is criticized, whatever his importance. It happened to a very famous banker like Paul Warburg before the ‘29. It happened to many others more recently, as we will see. This is particularly worrisome, because who tries to awake the world is particularly irrelevant just when the bubble is going to produce the most damages.

In those periods, inside the banks the tug of war between the profit-makers side (traders, bankers, etc.) and the cost-side (risk managers and the like) is particularly unfavorable to the latter and the strength of a bubble can be measured from how irrelevant they are. When, just before the collapse, Rajan asked to many risk managers why they were acquiescent to strategies they deemed irresponsible, they replied: “you must understand, anyone who was worried was fired long ago and is not in this room” (Rajan, 2010, p. 141). For the banks was only natural selecting manager who were gung-ho for the bubble. This is also clear from the one sided official statement, for instance: “The banking industry is in exceptional health” (James Chessen, chief economist of the American Bankers Association, few months before the crisis, quoted in Bair, 2012, p. 24).

Interestingly, many top manager were conscious that a dangerous mania was going on but they had no alternative. As very aptly the former CEO of Citigroup Prince said: “when the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you’ve got to get up and dance. We’re still dancing” (*Financial Times*, 7th September 2007). Then all of the sudden the music stopped.

Scientifically speaking, the situation was even worse. First of all, in the Arrow-Debreu world, banking, finance and even money are completely useless as “If markets were complete, financing and insuring would be trivial” (Philippon, 2008; see also Panico et al., 2012, Nowotny in

---

<sup>8</sup> See, for instance the famous pamphlet published in 1688 by the Jewish merchant De la Vega that proposed the very same idea.

Dombret and Lucius eds., 2013 and Kregel and Tonveronachi, 2013). But although banks and finance cannot fit into the orthodox theoretical framework, mainstream economists drawn practical conclusion as if they could. This meant that they misled authorities before and during the crisis. In fact, first of all, they denied the very possibility of a crisis. A typical example of this is a book like *The Economics of the Great Depression* (Parker ed., 2007), where a rerun of '29 is ruled out and Minsky is not even mentioned. In his contribution, Cecchetti noted the capital ratios of the banks were a lot lower than in '29 but everything was fine nonetheless. He stated: "today we let banks fail but we do it in a way that is designed not to create panic. A bank failure today will almost be invisible to its customers because it will be done over a weekend" (p. 165). Not quite as with Lehman Brothers.

Secondly, even if, for whatever unlikely reason, a crisis materialized, it would be rapidly over (Greenspan, 2007 among many). In the meantime, just leave the banks alone and everything would be fine. This was the distilled wisdom of orthodoxy. We give only a couple of citations: "private sector has much better incentive to create financial institutions that will make the financial system operate efficiently" (Mishkin ed., 2002); "Market discipline should reduce the bank manager moral hazard problem of excessive risk taking by making the bank pay the actual cost of its risk taking" (Freixas and Rochet, 2008). Economics were proudly united behind the "new consensus":

"As matter of fact, as late as August 2008, Olivier Blanchard, the current chief economist of the International Monetary Fund, claimed that the state of macroeconomic was good. "Macroeconomics is going through a period of great progress and excitement, and that there has been, over the past two decades, convergence in both vision and methodology...This was a view shared by many academics and practitioners: the degree of consensus achieved in macroeconomics has been unprecedented since the 'Golden Age' of the 1950s and 1960s. It is not a case that this view was labelled the New 'Consensus' Macroeconomics." (Brancaccio and Fontana, 2011).

The most "Keynesian" part of the orthodoxy could accept some short-term rigidity as a tool to reconcile reality with the paradigm (as in the DSGE models). In the long run all rigidities were dead and the world returned to be perfectly neoclassical.

As part of the ruling cultural environment, mainstream economics could not be defied only deified. For instance, in 2005 Rajan was lambasted for having timidly exposed some drawbacks of financial globalization<sup>9</sup>. Regulators like the former chief of the CFTC, Born, or Bair, then President of the FDIC, were violently attacked during public conferences because they dared to put some doubts on market friendly regulation. For the operators the good side of the new consensus was that theories like the EMH allowed, via Black-Scholes-Merton model and the like, to create new markets thus expanding the bubble (Johnson and Kwak, 2010). This was not secondary in the process of economics trivialization. As Johnson (Stiglitz et al., 2009) put it:

"The seduction extended even (or especially) to finance and economics professors, historically confined to the cramped hallways of universities and the pursuit of Nobel Prizes. As

---

<sup>9</sup> As anyone can read, in the now famous paper (2005) Rajan is extremely cautious and always couples critiques with praises. For instance: "The broad participation has allowed risks to be more widely spread throughout the economy"; on securitization: "pooling reduces adverse selection", on interconnectedness: "advantages of interlinked markets are many" and at the end "I believe the changes have, in general, expanded opportunities significantly and have, even on net, made the world tremendously better off". This prudence was to no avail.

mathematical finance became more and more critical to practical finance, professors increasingly took positions as consultants or partners at financial institutions....One effect of this migration was to lend the stamp of academic legitimacy (and intellectual intimidation) to the burgeoning world of high finance.”

Thus, theoretical and practical euphoria were merged to the glory of the bubble. The early warning, in the form of the LTCM demise, fell on deaf ears. The fact that Nobel prize winners did not grasp the core essence of financial markets was not considered of any importance.

### **3.2 Bubbling banking regulation**

The worst effects of this cultural and scientific environment were suffered by banking regulation. Even central bankers were inside the bubble and proposed ideas like this: “we need to have faith in the invisible hand” (Kohn in 2007, quoted in Dombret and Lucius eds. 2013). This faith meant deregulation. As Alvarez, General Counsel of the Fed put it: “the mind-set was that there should be no regulation” (cit. in Bair, 2012). Markets are efficient, banks are efficient. Everything seemed to go in the direction of a safer environment. This was true for derivatives (enthusiastically praised in the IMF’s GFSR of April 2006) or securitization. Banks were smarter than ever in managing risk: “More precision in estimating risk is tantamount to a reduction in risk...Larger, more diversified, loan pools may result in overall risk reduction” (Yellen, 1996). Therefore, even prudential regulation was useless. Why enforcing ratios? The market will monitor the banks (Holmstrom and Tirole, 1997). Even experts of the ‘29 depression were dragged by the tide, like Bernanke, who denied any risk of house price bubble (Bellamy Foster and Magdoff, 2008).

Since the start of the Basel Committee, every part of banking regulation was the effect of a banking crisis and when the crisis ended, attacks on the new regulation started to flock. In the case of the framework of Basel I, the main accusation was that it was too simplistic and prone to arbitrage. Instead of preventing arbitrage, the idea was to make it legal. In 1995-6, the Basel Committee proposed to amend the agreement by adding requirements for market risks. The goal was to improve the link between the capital and the risks assumed by banks (BCBS, 1996). The main feature of the amendment was that it took into account the request of the banks to adopt their own internal models to measure exposure to market risks as an alternative to standard regulatory measures. The idea seemed obvious: given that banks’ model were more advanced than regulation, why not use them for supervisory purposes? This philosophy has been extended to all types of risk with Basel II. Effects have been nefarious. Every bank developed internal model to reduce its capital requirements showing to the market and the regulator that the opposite was occurring. The micro-efficiency detonated the macro-bubble.

When someone proposed to put a backstop to these models, for instance with a leverage ratio, was silenced as a stone age shaman (Bair, 2012). Empirical analyses seemed to favour this trend (for instance: “the probabilities of bank failure are lower under Basel II than under Basel I” Repullo and Suarez, 2008). The very idea of stopping a bubble was considered irresponsible. Inflation targeting was good, asset targeting was not. The continuous growth of the sector on the world economy was good too: “Thanks to advances in communications, computing and financial know-how, the financial sector’s size and share in value added have increased over time” (BIS, 2010, p. 75). Why the same advances were not helping other sectors was not explained. On the same token, the more growing banking systems were the best. The IMF gave a very positive review, with its Financial Sector Assessment Program Update, to Ireland in 2006, although AIB, one of the “big four” banks of the country, was growing its assets 40% a year (Caprio, 2013).

Before 2008, the crises seemed confined to single sectors or distant countries. This was attributed to specific problems (the IT bubble, Enron, crony Asian capitalism and so on). The solution was more deregulation and privatization. The case of LTCM we already mentioned did not help either as the crisis was stopped by the heavy pressure of the NY Fed on big banks to bail it out. From then on, crises after crises ensued, until the “big one” shocked the world economy. As an apt epitaph to that world we can quote Greenspan: “I was wrong” (Caprio, cit.).

The most important and worrisome lesson we can draw from this episode is that the “this time is different” syndrome and bubbles cannot be eradicated from the system as they are tantamount to profit maximization behaviour. After a crisis, everybody will say “this time we got the lesson” just like a drunken announces he will never drink again. Cheap talks. Economy has its iron logic. Economics can only follow.

### 3.3 The rebirth of common sense

*Common sense is not so common - Voltaire*

After such a disastrous failure on the theoretical and regulatory front, theory and practice suffered a strong decoupling. Central banks and government could not afford to wait for economists to mend their models. As Arnold et al. (2012) pointed out: “not uncharacteristically, policies have moved ahead of academic research: waiting was not an option”.

So the idea was: while you guys in the universities think about how to put the world back into your theories, we will try to save the world as we can. This *primum vivere* sort of practical theory was even theorized (as in Ciocca, 2014). For instance, Goodhart (Turner et al., 2010) observed with a bit of an exaggeration: “Financial regulation has always been a-theoretical, a pragmatic response by practical officials, and concerned politicians, to immediate problems, following the dictum that —We must not let that happen again”.

In this context, we will underline some points that we consider the most important flaws of the present paradigm and that, as we will see, are escapable with the Minskyan alternative.

The first point is the useless quest for micro-foundations. When the crisis struck, long forgotten ideas like systemic risk and macro-prudential supervision were frantically brought back from the cellar. Obviously, as we rediscovered that “financial stability encompasses more than the sum of individual risks that exist in a financial system” (Dombret and Lucius eds., 2013, p. XVIII). Banking supervision micro-based is at least ineffective:

“The current approach to systemic regulation implicitly assumes that we can make the system as a whole safe by simply trying to make sure that individual banks are safe. This sounds like a truism, but in practice it represents a fallacy of composition. In trying to make themselves safer, banks, and other highly leveraged financial intermediaries, can behave in a way that collectively undermines the system.” (Brunnermeier et al., 2009, p. VII)

Martin Wolfe (*Financial Times*, 19th March 2009) made the same point: “individual rationality does not ensure collective rationality”. This is nothing new. Kindleberger (2005, p. 47) wrote:

“Yet euphoric speculation with insiders and outsiders may also lead to manias and panics when the behavior of every participant seems rational in itself. Consider the fallacy of composition when the whole differs from the sum of its parts. The action of each individual is rational—or would be if many other individuals did not behave in the same way”.



Banking regulation too was forced to quit the micro-approach:

“The main policy paradigm shift has been the strengthening of the macroprudential, or systemic, orientation of regulatory and supervisory frameworks; that is, the recognition that frameworks focused on seeking to ensure that individual institutions are sound on a stand-alone basis, as prevailed in many jurisdictions, were flawed. It could miss the wood for the trees” (Arnold et al., 2012).

However, renouncing micro-foundations is easier said than done. It is tantamount to renounce to everything connected to market efficiency from EMH to the quantity theory of money. When Admati and Hellwig (2013), criticizing the idea that raising capital for the banks is socially expensive, wrote that “what is expensive for the banks, need not be expensive for the economy”, they denounce, maybe not for purpose, the invisible hand metaphor, the core of economic thinking of the last 250 years.

The second point is uncertainty. Economists became aware again of the fact that markets are based on a genuine uncertainty à la Keynes (Haldane 2009a; Turner, 2012) and risks involved in banking and financing are not objectively measurable.

A third point is that ideas are pro-cyclical just like the markets and it is useless to think that economists will quit optimism for ever after a debacle. As Borio (2012) said:

“So-called “lessons” are learnt, forgotten, re-learnt and forgotten again. Concepts rise to prominence and fall into oblivion before possibly resurrecting. They do so because the economic environment changes, sometimes slowly but profoundly, at other times suddenly and violently. But they do so also because the discipline is not immune to fashions and fads”

A fourth point is linked to monetary policy. Before the crisis, fiscal policy was considered a non-important relic and the only public action needed was monetary policy via inflation targeting. This is changed. Now the most important public target is financial stability and monetary policy faces significant limitations as a tool to promote financial stability.

The final point is that it is now obvious that financial fragility is endemic and that it worsen, paradoxically, after long period of stability as Minsky understood many decades ago. For instance: “The context is what might be called the ‘paradox of financial instability’: the system looks strongest precisely when it is most fragile” (Arnold et al., 2012).

The problem is that for all these observations, crisis did not change much yet (Turner 2012). This is true for academia, where heterodox thinking is marginal and will stay so, but more important, this is true for banking regulation where the regulatory crackdown is constantly watered down and risks to be ineffective in changing structured habits.

Although we know that there are strong reasons why wild optimism is the natural ruling paradigm in economics, we profit from the crisis to try to expose our alternative.

#### **4. Investment, prices and profit**

Minsky took inspiration from different sources to build his theoretical framework. We will try to outline it here, comprised his gaps that we think can be filled using insights from the classical school. In fact we will start describing what is not explicitly mentioned in Minsky, that is an

explanation of the general trend of profitability.

Classical economists and Marx took for granted that with the development of capitalist accumulation also came a tendency of the general profit rate to decrease. We do not enter here in the causes they propose to explain the law, we only draw consequences from it as far as business cycle is concerned. The general profit rate is, of course, an abstraction because not every capitalist invests in every firm. Therefore an investor is not necessarily concerned with the law as long as his activity yields an higher than average return. Needless to say, competition will tend to push sectorial profit rate towards the average via investment. Every investor seeks a higher rate of profit through the movement of capital between sectors, producing the convergence towards an average rate of profit. The profit rate of new economic sectors, greater than the average, do a hard or soft lending to the general rate. We have thus two converging dynamics: the profit rates of new sectors tend, with the maturing of the industry, to shrink; the general rate of profit tends to decrease for the overall maturity of capitalism. Adam Smith (1776, [2007], p. 75) pointed out this mechanism as follows:

“The establishment of any new manufacture, of any new branch of commerce, or of any new practice in agriculture, is always a speculation from which the projector promises himself extraordinary profits. These profits sometimes are very great, and sometimes, more frequently, perhaps, they are quite otherwise; but, in general, they bear no regular proportion to those of other old trades in the neighborhood. If the project succeeds, they are commonly at first very high. When the trade or practice becomes thoroughly established and well known, the competition reduces them to the level of other trades.”

The overall trend is connected to the general rate of profit, the cycle is connected to the way capitalists use to skip the trend. With this classical explanation in mind, all the other theoretical pieces proposed by Minsky fit nicely, starting from the fact that innovation aims at escaping the trend and competition is the Nemesis that brings back the new asset's rate of profit to the average.

It is rational for every investor to buy the new asset as it yields an higher return. This means bubbles. When a sectorial bubble lasts enough, it is transmitted to closer sectors and then to the economy as a whole. The financial leverage of investors grows with the bubble as the credit flows to finance it. At a certain point, the bubble collapses because it incorporates an assumption that goes against the gravity law of capitalism: the idea that an asset can yields for ever an higher than average rate of profit, that would mean that profit maximization does not work anymore. Ebb and flows of profits and of the profit rate explain the trend and the cycle of capitalist economy including the prevailing economic policies and regulations.

To understand modern finance, all the very complex capitalist economic machine can be synthesized in the famous Marx's formula  $M' > M$ : the very essence of economic activity is to have, at the end of the day, more money than before. This means profits. Although classical economists and Marx explored the nature of profits and wealth, to Minsky's purposes, it is sufficient to stick to the formula without exploring what lies behind. Paraphrasing Marx, the economic system can be conceived as an immense accumulation of activities. To exist these activities must be financed and therefore can be represented as financial assets, whatever is the way they are funded. This means that investment is tantamount to finance. This because the economy depends on profits, profits depend on investment and investment must be financed. Therefore, everything in the economy is linked to the financial structures of economic operators and in particular on how investment is funded. This is the source of the business cycle. The link between profits and investment can be traced back at least to the Marx's reproduction schemes but also to Hilferding, Schumpeter and above all, Kalecki. The most interesting aspect of the link

is that it breaks what could seem its natural direction, that is: investment then production then sales then profits. On the contrary, that between investment and profits is not a one-way relationship. Why investment means uncertainty? The answer is because how (in terms of time-span and convulsiveness) the new asset profit rate will return to average is not predictable. The new asset has a higher than average yield and attracts investors that fight to finance/buy it, starting a bubble.

Many economists (among them, Kindleberger and Galbraith) have explained and described how a bubble is born, lives and dies. For our purposes the most important aspect is that, due to uncertainty, there is no way to reach a measurable opinion on future profits of a given asset. Therefore the investment cycle is linked to beauty contest. Fluctuations in investment determine fluctuations in profits, but the former derive from uncertainty on future profits. So the circle profits-investment-profits is basically another name for uncertainty and animal spirits.

It is even trivial to point out that in good times risks are underestimated and financial leverage goes up, thus transforming respectable businessmen in Ponzi fraudsters mainly *malgré eux*. We also remind that this madness is completely rational and a different behavior does not guarantee higher returns.

In this context, money and investment are strictly connected because money is basically (private) credit. Contrarily to the old Monetarist idea that central banks are the all-powerful creators of money, money supply tends to escape their control especially during the bubbles i.e. periods of strong financial innovation. As Merton and many others observed, financial innovation is basically a way to by-pass central banking and banking regulation (Corbisiero and Musella, 1997). Innovation means higher profits in terms of rate and volume. In fact, financial innovation is linked to a growth of both. The spark of financial volumes growth is credit then deposits not the other way round:

“The reality of how money is created today differs from the description found in some economics textbooks: Rather than banks receiving deposits when households save and then lending them out, bank lending creates deposits. In normal times, the central bank does not fix the amount of money in circulation, nor is central bank money ‘multiplied up’ into more loans and deposits.” (McLeay et al., 2014)

This explains why during the bubbles not only banking regulation is moderately useless but also monetary policy. When private operators are confident, animal spirits are high, they don’t mind warnings by central banks on irrational exuberance and so on. However, this theory also explains why market cannot give limits to the banks, these can only come from public authorities (especially central banks). Jakab and Kumhof (2015) observe:

“The fact that banks *technically* face no limits to increasing the stocks of loans and deposits instantaneously and discontinuously does not, of course, mean that they do not face other limits to doing so. But the most important limit, especially during the boom periods of financial cycles when all banks simultaneously decide to lend more, is their own assessment of the implications of new lending for their profitability and solvency, rather than external constraints such as loanable funds, or the availability of central bank reserves”

This is a farewell to any idea of market friendly supervision.

#### **4.1 Methodological consequences of the beauty contest**

Before we proceed explaining the Minskyan perspectives on investment and finance, we make a brief detour on the methodological consequences of living in a beauty contest-Ponzi world. After the crisis, there has been an explosion of debates about the so called model risk, that is the risk coming from a too simplified model of how economy works. Indeed the dominant model was not only simplified, it was totally wrong. But here we deal with this issue from a more radical perspective: the question is not that a specific model was wrong, the question is there is no way to formalize the functioning of the beauty contest in any meaningful way. This was absolutely clear to Keynes and Minsky, both perfectly acquainted with mathematics and statistics but also aware of their limits. As Foley (2010) observed: “Both the practice of mathematical modeling and the procedures of statistical inference are strongly biased against a dialectical understanding of the unfolding of time”. Facing the bankruptcy of ordinary models, many economist turned to more sophisticated tools (non-linear models, chaos theory and so on). For all their interest, these fancy tools cannot “completely express the fluidity of human social interactions” (Foley, cit.).

This impossibility goes beyond the Knight-Mises position that uncertainty can be won by the spontaneous functioning of the market, while economic planning (in whatever form, from Keynes to Gosplan) cannot, “the financial fragility hypothesis calls into question the *laissez-faire* dogma of the superior informational and resource-allocating performance of markets around which mainstream economics unifies itself” (Foley, cit.). This could seem an abstract issue of economic methodology, but it has direct decisive applications in banking supervision. There is no way to anticipate the crisis with a model (hence with stress test or early warning indicators). In a sense this is similar to the Lucas’ critique: if such an indicator exists “this would result either in an immediate crisis or no crisis at all” (Drehmann et al., 2010). As we can recall, with a sort of lapalissade, still a necessary one, “Most flight to quality episodes are triggered by unanticipated or unexpected events” (Caballero and Krishnamurthy, 2007). What is the point, then in creating a model that only includes anticipated (deterministically or stochastically) events?

This also brings us to the issue of what is exogenous in a theory. Traditionally, a theory that considers the crisis as exogenous has been labelled as optimistic, while the heterodox realism required a way to include an endogenous mechanism for crisis. This makes sense if we are describing the general idea (as the classics, or Keynes and Minsky did) but where we try to formalize this mechanism of destabilizing stability, of structural uncertainty, we do not reach any interesting result. If the crisis is included in the model it can be avoided. Endogeneity means the possibility of prevention and is tantamount to an economy with avoidable crises. But this is not the case. Crises come as a shock not only in the models but also in everyday life. In this sense, capitalist instability is endogenous but cannot be endogenously formalized.

#### **4.2 The role of innovation**

Minsky emphasized, among others, the dialectical nature of competition, innovations, and banks. Competition promotes economic growth and entrepreneurship, but it also promotes short-termism and conformism, even though this may entail a great deal of risks. Innovations create new markets but also alter the structure of the economy, behaviours, and incentives. Banks, at least in the traditional banking model, promote stability by carefully selecting borrowers, but banks also promote instability because of the structure of their balance sheet and because of competitive pressures to meet targeted returns. Ultimately, profits and investment are connected through innovation:

“A financial innovation which increases the funds available to finance asset holdings and current activity will have two effects that tend to increase investment. The first is that the market price of existing assets will rise. This raises the demand price for outputs that serve as assets (investment).

The second is that by lowering the cost of financing for production, financial innovations lower the supply price of investment output” (Minsky, 1982a)

More innovation and more investment yield more profits but also more instability especially because the more the bubble proceeds the higher financial leverage becomes. This mechanism is very important to understand how financial markets work. First of all, the probability distribution of risks of an asset does not exist due to uncertainty and market participants are not interested in probability but in what competitors are doing. Hence the beauty contest is the name of the game, not inference statistics. Secondly, without innovation and uncertainty, profits are doomed to go down. Therefore risks (or better “real” risks that is investing in new assets) are exactly what market participants look for, what in mainstream economics is called “tail risk” (Acharya et al., 2010). Innovation, investment, uncertainty and financial bubbles are one and the same thing. This also explains why the epoch of low competition and innovation entails financial stability.

Innovation yields also a growth of financial volumes first in the directly affected segment, then in the financial sector as a whole. This has been rediscovered with OTD but long ago Minsky (1975) noted:

“...each new instrument and expanded use of old instruments increases the amount of financing that is available and which can be used for both investment and the taking of positions in inherited capital-assets”

A second aspect of innovation is that it increases interconnectedness via complexity and others means. All in all, innovation produces more micro-efficiency and more macro-fragility. This explains why the more lasting is the cycle (high profits, high growth) the more fragile is the situation. This is the most deep and counter-intuitive idea of Minsky (and Keynes). Prosperity is destabilizing because it is built on financial leverage. Practically: i) there is a strong raise in capital goods (and financial asset) prices, ii) profits on these assets are good so that, apparently, the financial position of operators is not deteriorating but in reality everyone is becoming a Ponzi speculator:

“In a system dominated by hedge finance, the pattern of interest rates...are such that profits can be made by intruding speculative arrangements. The intrusion of speculative relations into a system of mainly hedge financing of positions increases the demand for assets and therefore raises asset values – that is, it leads to capital gains. A regime in which capital gains are being earned and are expected is a favorable environment for engaging in speculative and Ponzi finance. Profit opportunities within a robust financial structure make the shift from robustness to fragility an endogenous phenomenon” (Minsky, 1986b, p. 210)

At a certain point the bubble explodes. The contingent reasons can be different and are not very important. The core aspect is that, as we have seen, there are strong forces that pushes for a re-equilibrium of assets yields. Innovation spreads through the market so that profit margins go down and prices with them. So banks realize at their expenses how fragile were the collateral of the innovators and hence how Ponzified is their balance-sheet. This trajectory is a confirmation of the fact that uncertainty is the very fabric of the system:

“If rational agents doubt the validity of the model that currently guides their actions, then, they stand ready to abandon that model as the behavior of the economy produces data that falsify the model. Whenever a model with a weak degree of belief guides the actions of an agent then, as evidence accrues, initial models are likely to be abandoned and a new set of models be

substituted. When this happens, sharp changes in the behavior of agents and of the economy are likely to occur.” (Minsky, 1996)

As Keynes insisted many times, uncertainty is linked above all to liquidity because liquidity is what makes the situation of a single agent not relevant as an indicator of the overall stability:

“Of the maxims of orthodox finance none, surely, is more anti-social than the fetish of liquidity, the doctrine that it is a positive virtue on the part of investment institutions to concentrate their resources upon the holding of “liquid” securities. It forgets that there is no such thing as liquidity of investment for the community as a whole.” (Keynes, 1936, Ch. 12)

This is the point. Liquidity risk can be managed at a micro level but for the banking system as a whole this is not possible. The liquidity issue is the direct reason why markets are based on beauty contest and everything is a convention. It is interesting that Keynes, just before introducing the metaphor of the beauty contest, proposes another metaphor:

“it is, so to speak, a game of... Musical Chairs — a pastime in which he is victor ...who secures a chair for himself when the music stops. These games can be played with zest and enjoyment, though all the players know that ...when the music stops some of the players will find themselves unseated” (ivi)

This is exactly the quotation we made by Chuck Prince. Everybody knows perfectly that is playing a game where someone – and sometimes everyone – will be crushed at the end. These are the rational expectations of this world.

### **4.3 Profits are the key to assess economic policies**

Facing this situation what are the ways to contain uncertainty and crises? Firms react to uncertainty growing in size (trustification). For their part, public authorities should start from a basic point: capitalism has an upward instability problem and “the critical task of stabilization policy is to prevent sharp decreases in profits” (Minsky, 1986a). Therefore, the main task of the public sector is to reduce uncertainty reducing profit volatility; this is the sense of fiscal and monetary policy, as Minsky put it “to keep business cycles within bound”.

Starting from it we can state that to reduce uncertainty the public sector size is linked to the leverage of the economy: the higher the leverage the stronger the need to stabilize the situation through public policies, because “Big government prevents the collapse of profits which is a necessary condition for a deep and long depression” (Minsky, 1982a).

This task is necessary to save banks from themselves but it is also self-defeating because the very end of the bubble (that also induces the equalization of the rate of return on new and old assets) increases the search for new high margins assets (“search for yield”), i.e. for a new bubble. Of course, bubbles and financial innovation can be tamed by financial repression, but only as long as profitability is good. When this is not the case, authorities have no alternative to allow financial innovation, deregulation and so on. That is why it is useless to condemn deregulation or a loose monetary policy as factors behind the crisis because public policies’ orientation flows from the needs of private sector, as Minsky observed many times.

To sum up our brief review of Minsky’s theories, financialization is not independent from the general trends of capitalism, on the contrary. Bubbles, financial innovation, leverage as well as banking regulation are all linked to the basic trend of capitalism that is ups and downs of

profitability. The theoretical advancement of Minsky on Keynes is the acknowledgement that the investment theory is also a theory of indebtedness. The high tide of investment is also the height of the bubble and of optimistic expectations, a boom of credit and debt. Creditors accept riskier clients as collaterals seem good and the overall perspectives of being repaid are favourable. This is basically what Kalecki called the increasing risk principle. The height of the bubble is also, typically, a period of rising prices, due also to wealth effects. Conversely, post-bubble periods are often associated with debt-deflation studied by Fisher and others.

These ideas can be a solid ground on which building an effective framework for banking regulation.

## **5. The aftermath of the crisis and the banking supervision**

In the Formula 1 races, when there is an immediate significant danger, a safety car enters the circuit until the danger is over, then it leaves the pilots alone again. This is basically the role assigned in the banking re-regulation after the crises. In a nutshell, the reforms go in the direction of deleveraging via risks reduction and capital increase (BIS, 2010). In other words, reforms reduce the profitability of the banks for a while to restore financial stability. This is done in many ways besides deleveraging. For instance, compliance costs go up because regulation is tougher and more detailed, interest margin is low because interest rates have been lowered pending lending of last resort rescues, authorities require better and wider data reporting (BIS, 2011) and so on. The more effective the crackdown, the louder the protests by the banks. Reactions can take two roads that can be summarized as follows: financial innovation and lobbying.

Financial innovation allows the banks to create products and services not or poorly regulated and particularly profitable. As we have seen, regulatory arbitrage is per se a form of financial innovation. The other tool is self-explanatory. The two are complementary because when financial innovation succeeds in undermining the grip of regulation, deregulation lobbyists have the upper hand. They say: look, regulation does not work anymore, just leave the markets alone, let's call back the safety car. The length of the safety car presence is a precise indication of the relative strength of financial capital vis à vis the State. FDR succeeded in leaving the safety car on the circuit for decades. After 2008, it was recalled after a couple of laps.

Here we briefly analyze the main reforms linked to banking supervision undertaken after the crisis. We divide them in three areas: prudential supervision, structural measures, compliance and other measures.

Before we go into single aspects, we observe that many scholars acknowledge the importance of an integrated approach that uses capital measures, liquidity measures, organizational aspects and so on in a combined fashion (Blinder, 2010). For instance, for big banks the FSB (2013) is ready to "consider domestic structural measures that are complementary to an effective SIFI Framework". However a combined approach has many limitations, above all because prudential and structural supervision have different and in many ways opposite backgrounds. Proposing their integration is a way to admit that we are in a period of transition, where the prominence of prudential (hence international) regulation is precarious but structural (basically national) supervision is not able to undermine it. The up and downs of the financial system will decide what kind of supervision will prevail in the future.

### **5.1 Prudential supervision**

In a nutshell, capital requirements have been made higher and stronger (that is of higher quality).

This is the core message of Basel III. Other important aspects are: of the return of non-risk-based requirements (the leverage ratio), a serious consideration of the liquidity risk and specific measures for big banks (so called SIFIS or G-SIBs).

As far as the first aspect is concerned, risk-based ratios were deemed better before the crisis, as “normal” ratios were prone to arbitrage. The problem is that risk-based ratios were even easier to be by-passed using over-optimistic internal models. So the leverage ratio of the banks exploded. The victory of risk-based supervision also meant a drastic reduction of liquid assets (see, for instance, BOE, 2010). These trends increased micro-profitability but also macro financial fragility. The return of a leverage ratio and liquidity ratios is a strong remind of how much the crisis changed the landscape. For instance, liquidity risk in Basel II is barely mentioned. Now it is paramount again.

As for the SIFIs, it has finally been acknowledged that size matters in finance and they are different in many ways (Esposito, 2013). Therefore, as far as prudential supervision is concerned, FSB and BSBC proposed additional capital requirements for more systemic banks (see the documents of the FSB in the bibliography).

All in all, these steps go in the right direction and one that is also envisaged in the Minskyan framework as we will see. The question is that capital ratios are rarely a cause of concern until the collapse of the bank. For instance just before its demise, Lehman Brothers had a Tier 1 Ratio higher than the minimum required by Basel III (Johnson and Kwak, 2010). More generally, “none of the largest 100 banks were constrained by de jure capital standards in the period 1982-2000” (Taylor and Goodhart, 2004) and the “IMF has shown that all of the banks that required bailouts in the crisis reported higher-than-average levels of capital in the last period before the intervention” (Calomiris and Herring, 2013; on the issue see also Allen and Carletti, 2009 and Caprio, 2013). Kay (2009) can conclude: “These rules proved worse than useless. Banks entered the crisis with capital generally in excess of the regulatory requirements. These provisions proved not just inadequate, but massively inadequate, for the problems they faced”. Finally, we should also observe that in the OTD model, capital ratios are not relevant as the banks do not hold the assets on their books (Wray, 2011b). All in all these measures, although positive, are unlikely to make a substantial difference especially for big banks, although the importance the liquidity risk has been given back is welcome.

## **5.2 Structural measures**

Before the crisis, structural supervision was definitely out of fashion. The demise of the Glass-Steagall Act in 1999 definitely confirmed it. This was due to many causes, the main ones being deregulation and globalization. Prudential supervision is easy to apply on different business models, systems, firms. Whatever they do, they must have a given capital/assets ratio. On the contrary, structural measures are eminently national and model-specific so they are very difficult to apply on an international scale. The return of structural supervision is then a demonstration of the impasse of international banking (see Esposito, 2013, sec. 3.3, and Ötker-Robe et al., 2011).

The essence of structural supervision is that the law directly allows or forbids specific activities and organizational structures. This is how the Volcker rule or the British ring-fencing work. These measures can rapidly change the way banks work, but they have also a number of drawbacks. Some objection is not very relevant. For instance, the ECB (2010) is against the Volcker rule because it would run counter to the established model of universal banking and it might trigger unintended effects such as the migration of riskier activities to less regulated (and often less capitalised) areas of the financial system. What happened before the crisis does not



seem to show that without Volcker rule the situation was better anyway. The problem is that the crisis was not confined to securities trading: “Would a Glass-Steagall Act work? Not really. Think of Northern Rock. Of HBOS. Indeed of our Greek banks. They contained no substantial investment arms, no casino banking. And yet they were the ones that failed” (Kovacevich 2014). Moreover, the securities section of the balance sheet is now linked to the others, as Kregel (2010) observes:

“A return to Glass-Steagall thus presents a conundrum. Since the activities that currently provide the least costly method of short-term business financing are fundamentally linked to securities market activities, they would be prohibited to regulated banks. In addition, it would appear impossible to legislate monopoly protections similar to those of 1933 for deposits without active monitoring and prohibiting competitive innovations by nonregulated institutions”

It is also likely that these measures would help big banks to create business models that are more and more similar thus reducing the diversity of financial system as well as contributing to a fragmentation of banking markets along national lines. The latter consequence is not unanimously considered negatively (Moosa, 2010).

It is worth noting that Minsky proposed something similar to ring-fencing in 1995 (Kregel, 2012) as a way to go on without the Glass-Steagall Act. The mainstream scholars reached his conclusions two decades later, where the situation is by far more serious and this measure alone can hardly make a strong difference.

Facing the failure of light-touch supervision, many commentators proposed ways to punish banks for their non-traditional activities, besides the Volcker rule. For instance, Fisher (2013) proposed confining access to the federal safety net (the Fed’s discount window and federal deposit insurance protection) to traditional commercial banks (see also Rajan, 2010). Others proposed the so called narrow banking, that is basically a proposal to separate insured deposit taking from lending activities or even more extreme proposals such as the Kotlikoff (2011) limited purpose banking.

The main drawback of these measures is that they would prevent banks to create liquidity that is one of their fundamental contribution to the economy (Diamond and Rajan 2001). As Kregel (2012) put it: “It is the level of business investment and government net expenditures that generate the cash flow that validates the corporate liabilities and procedures the real source of financial stability in the system”. Moreover, they might exacerbate price and valuation driven instability (Turner, in Turner et al., 2010). Thirdly, by eliminating the creation of liquidity, they would create a permanent trend towards deflation, also reducing the possibility of the banks to act as the Schumpeterian handmaidens to innovation and creative destruction (Kregel, 2014).

Notwithstanding all this caveat, we will see that there are no alternatives to structural measures to create a long-term stable financial system, provided that the right measure is chosen.

### **5.3 Compliance and other measures**

We deal here with a long series of heterogeneous measures. We will only touch the most relevant for this work.

The first and more debated is the creation of effective way to close a bank. The resolution of big banks has been a nightmare because of their size, interconnectedness and international reach. As these features are considered good or not modifiable, a lot of work has been done on resolution

mechanism to build “a framework to resolve failed financial institutions in a way that minimizes disruption to the financial system when failure occurs” (Ötger-Robe et al., 2011). Concretely, many ideas have been put forward such as “living wills”, bail-in and contingent capital (see European Commission, 2009, Acharya et al., 2010, FSB, 2011a, IMF, 2010, Chan-Lau, 2011, Powell, 2013, Huertas 2015).

The idea behind these measures is correct and can be synthesized as follows: “It is imperative to reinstate a credible fear of bankruptcy for banks and other systemically significant financial institutions so as to ensure that banks once more play their proper role in a market economy” (Lastra and Wood, 2010). The question is: do resolution mechanisms keep awake big banks CEOs forced to change their business model? Hardly so. The second point is that “in front of an imminent crisis, the promise of no interventions made by governments is barely credible” (García-Palacios et al., 2014). In other words all these mechanism are irremediably prone to the time inconsistency issue. Thirdly, they are ex-post measures and in general are not able to prevent a crisis. For all these drawbacks, nonetheless they are important in a different way, already envisaged long ago by Minsky (1986b) who talked of an “easy and cheap” way to resolve a bank. The question is uncertainty and credibility. These measures can convince the markets that the situation is more stable and under control, helping to improve the situation. Once again, beauty contest.

A second aspect is the return of systemic risk and macro-prudential tools. This is a very important development. It is not by chance that before the crisis the macro dimension of supervision was nonexistent. It was the practical consequence of micro-foundations in economic theory. Just like mainstream economics does not have a place for non-micro founded phenomena, Basel II does not have a place for macro-prudential supervision. Now the situation is changed so much that specific authorities have been created to study systemic risk, like the ESRB in Europe and the OFR in the US. Needless to say, systemic risk means SIFIs. In fact, deepening systemic risk means deepening the different risks posed by big banks to world economy (see Haldane, 2010 and Ötger-Robe et al., 2010 for a thorough analysis of measures to reduce systemic risk posed by the SIFIs).

A connected item is the quest for better data and better accounting practices. Authorities and investors have complained the lack of data to judge the true situation of the banks during the crisis. Moreover, the IAS-IFRS accounting standards (in particular the fair value method) have been exposed as pro-cyclical. For instance, Brunnermeier et al (2009), proposed to substitute the mark-to-market method with a mark-to-funding one. This is a good idea. However, we should observe that just like the “true model” of the economy does not exist because we live in a beauty contest world, the fair value of an asset or a liability is linked to the overall situation of the financial market. Risks affect the prices but also the other way round; there is no an exogenous anchor for balance-sheet values (Borio and Tsatsaronis, 2005). This is the problem with so called early warnings. They can predict the bad situation of a bank but not of a system. So there are limits on how much we can reach with new data (Crockett, 1997).

A different set of measures is linked to business conduct and consumer protection. The end of the bubble is always a period of frauds and swindles (The chapter IX of Kindleberger, 2005 is dedicated to this aspect; see also Fisher, 1933<sup>10</sup>). The last crisis was no exception. As the banks

---

<sup>10</sup> Even Marx has a say on the topic: “*On the other hand, there appears swindling and a general promotion of swindling by recourse to frenzied ventures with new methods of production, new investments of capital, new adventures, all for the sake of securing a shred of extra profit which is independent of the general average and rises above it.*” (Capital, Vol. III, Chapter XV,

were saved at the tune of trillions dollars of public money, their business conduct was particularly under the public scrutiny. Out of court settlements and fines of tens of billions have been fairly common<sup>11</sup> and there have been many measures concerning this topic such as creating special ADRs, specific supervision tools and so on. Specific authorities (like the US CFPB and the British FCA) have been created. This trend was linked to the political backlash against the banks (think, for instance, at the “we are the 99%” movement in the US). However, the strictness of enforcement of this regulation is likely to follow banking supervision as a whole<sup>12</sup>, because during the bubble no one is interested in quarrelling with the banks.

Another line of action has been education. As authorities are not confident in their possibility to change the banks behaviour, they try to change their clients instead. This is the idea behind financial education programs set to help the people to understand financial products<sup>13</sup>. The problem is that it is simplistic to believe that people behave in a given way because they don't know. Do the big banks CEOs understand financial markets? Of course they do, and yet they cannot but inflate a bubble until they end crushed under it. As for normal people, many times they simply do not have choice. For instance, many observe that savings are too low to grant a decent retirement retribution. Is it poorly designed pension funds regulation? Is it financial illiteracy? Is it too high taxes on savings, or simply too low wages? The issue behind financial choices of consumers is income distribution. The lower the wages the higher the debts. No financial education program can change this basic fact. The same is true for pension adequateness. Already in 1992, Minsky observed that “financial unsophistication of a vast proportion of the population is becoming evident” due to the privatization of the pension system.

The last type of interventions we touch can be labelled “skin in the game incentives”. The idea is to punish too risky behaviour and short-termism (for instance, with a Minskyan flavour, Wray, 2011b). This is nothing new (see, for instance, Minsky, 1977 cit. in Kregel, 2014). No one can deny that something has to change in this respect given that, as we already noted, in 2008 Wall Street paid bonuses in excess of \$18 billion after being saved by US taxpayers. The question is that reckless behaviour is part of beauty contest and of the overall trajectory of the bubble. Moreover, the size of CEO retribution is linked to the size of the firm. Reducing the latter will reduce the former.

## **6. How to rebuild the banking regulation following Minsky**

We have discussed so far the main trends of the international financial system, their consequences on financial regulation before and after the crisis and the ideas of Minsky on investment, financial stability and banking. We are now ready to put all together. We will start studying what is lacking in the new framework of banking supervision and how to remedy. This is particularly important because in the field of economic theory we are in a transition period, just like in the 30s, where reforms were worked out in a theoretical vacuum. So the discussion about banking supervision practice has much to say to theory nowadays.

### **6.1 Minsky and banking supervision**

---

<http://www.marxists.org/archive/marx/works/cw/volume37/index.htm>.

<sup>11</sup> See for the US experience: <http://blogs.reuters.com/data-dive/2014/08/22/bank-of-americas-big-fine/> and for the UK one: <http://www.economist.com/news/finance-and-economics/21642200-another-ruinous-tale-sharp-practice-may-be-reaching-close-43>.

<sup>12</sup> <http://www.reuters.com/investigates/special-report/usa-bankrules-weakening/>.

<sup>13</sup> <http://www.oecd.org/finance/financial-education/>.

The starting point to appraise the reforms is to understand that finance is not detached from real economy because they interact on a number of dimensions: growth, income and wealth distribution, unemployment, profitability (Wray, 2011b). As Minsky (1986b) put it: “financial reform can be effective only as a part of a general system of reform”. For instance, the concentration of income is linked to the surge of finance as Panico et al. (2012) observe:

“Since the expansion of financial lending can influence the income shares, a society that is committed to the stability of the distributive shares should be interested in the introduction of forms of regulations that make the loans of the financial industry grow in line with total wages”

This is an example of how it is necessary to link banking supervision to public policies as a whole. This could seem a bit too philosophic but has immediate practical applications: if wages do not grow in line with economy, the consequence is a higher financial leverage of households to keep up spending. This means a more fragile financial situation that regulators should take into account. A policy to guarantee full employment could well do much more for financial stability than hundreds of technical rules on ratios and risk-weighted assets. This conclusion before the crisis could be rejected as hopelessly *démodé*, now it is a common prescription. For instance Kumhof et al. (2015), noting the sharp increase in income and wealth inequality preceding the crisis, state: “because crises are costly, redistribution policies that prevent excessive household indebtedness and reduce crisis-risk ex-ante can be more desirable from a macroeconomic stabilization point of view than ex-post policies such as bailouts or debt restructurings”. Casualizing the labour market and cutting wages is an economic mistake and yields financial instability.

It is not by chance that we introduced the topic of income distribution, because this is paramount in the Minskyan perspective. Business cycles are basically investment cycles and investment are based on profits as “business profits are the key element in determining how well a capitalist economy works” (Minsky, 1986b). We have seen that the basic role of the state in the economy is to stabilize profits downwards and upwards. This is also true for banking regulation. In a nutshell, the first and foremost role of banking supervision is to help central banks to preserve financial stability. This means that the now fashionable again macro-prudential supervision contains the key elements to rebuild an effective framework. The general trends impose themselves to single banks and other economic agents via beauty contest. This principle has many effects.

First of all it helps to define the hierarchy of regulatory objectives. Financial stability is the most important, the others should be aligned to it. Secondly, from this hierarchy also flows the efficient institutional design of authorities and regulatory tools.

Before the crisis, a general financial crisis was ruled out as central banks have learned the ‘29 lesson (Temin, 1989 and Bernanke in Bellamy Foster and Magdoff, 2008). The institutional consequence of this conclusion, together with the victory of deregulation, was to create separate authorities to supervise banks and the financial system, like the British FSA (Esposito, 2005). Central banks pursued price stability, financial regulators prudential supervision and that was it. Bank panic and lending of last resort were considered medieval tales of no actual meaning. Then, banks started to collapse and things changed. As was particularly evident in UK, authorities that cannot change market sentiment because cannot lend are useless during a crisis. It was also evident that central banking and supervision goals are largely overlapping because financial stability and price stability are connected. For instance, assessing the SS&LL debacle, Minsky (1994) noted that this was due to the policy of Volcker to raise interest rates to fight inflation that basically meant the end of their business model. This was not anticipated because no one considered monetary policy and banking supervision together. Another more recent example is

the short selling ban after the Lehman Brothers collapse. It was imposed on shares of too big to fail (tbtf) banks but this shifted speculation towards small and medium banks, pushing public opinions to think the authorities “protected the big guys and let the smaller ones fend for themselves” (Bair, 2012). In general, monetary policy and banking supervision need coordination. As the BIS (2011) observes: “Central banks must be involved in the formulation and execution of financial stability policy if such policy is to be effective”.

This is also true for supervisory tools: the idea that different goals require separated authorities is superficial. When the things get serious, lending of last resort is the only tool viable to stabilize the situation. This is also linked to issues such as credibility (that is tradition) that are not irrelevant during a panic situation as Kay (2009) observed: “the Bank of England retains from that earlier time a prestige and authority which the FSA is never likely to match. That prestige and authority is of some advantage in the exercise of regulatory functions”. In the new situation it is clear that micro and macro prudential supervision must be pursued by the same authority (Bayoumi et al., 2014) and, broadly speaking, systemic risk issues should be prominent in terms of analysis and supervisory tools. As prudential supervision is basically micro (Onado, 2012), this mean a smaller role for the former.

As for “seriousness”, central banks risk their money (so to speak as they are public authorities) to bail out banks so they have more skin in the game in banking supervision than simple regulators (Bair, 2012). Moreover, as far as the regulatory capture is concerned, for lobbyists and government it is more difficult to capture a central bank with a printing machine and a trillion balance sheet than an authority that lives on fees or State transfer payments.

The need to coordinate monetary policy and banking supervision has also consequences on central bank independence. Bayoumi et al. (2014) noted: “Independence is clearly still desirable with regard to price stability. But it may prove politically difficult under expanded central bank mandates”. When financial fragility is widespread, independence changes meaning. The already mentioned crisis of SS&LL is a glaring example of the fact that monetary policy cannot be independent from banking regulation. The coordination needs are both ways. For instance, a dysfunctional banking system cannot be used to attain monetary policy goals as was too clear after Lehman Brothers collapse. The new framework of monetary policy and banking supervision should be created accordingly.

## **6.2 Tools of supervision**

The new institutional framework of banking supervision is not the only aspect that amounts to a complete vindication of Minsky ideas. This is also true for the tools of supervision. In fact, the conclusions we reached so far can be seen in a number of measures and decision taken at the international level and that, all in all, depart from the light-touch market friendly approach dominating so far. In the Minsky framework, micro-prudential supervision is a way to identify rotten apples, it cannot change the financial landscape. The classical tools of prudential supervision are generally good for that goal in the sense that they can effectively rank banks by risks but this ranking cannot measure the overall financial stability. Anyway, looking at the specific prudential measures, there are two items that before the crisis were generally overlooked: liquidity and profitability. In Basel III they are back on the agenda.

Liquidity risk was largely ignored before the crisis and the business model of the banks incorporated the idea that liquidity was always at hand when needed. Banking regulators largely agreed. Ironically, long ago a banking regulator (the OCC in 1966) contacted Minsky to develop regulatory tools based on the so called CFOS (*Cash Flow Oriented Bank Examination*, see

Minsky 1966 and 1967) that puts liquidity at the centre-stage. The core message Minsky (1967) explained is that “liquidity is not an innate attribute of an asset but rather liquidity is a time related characteristic of an ongoing, continuing economic institution”. In this approach the link between micro and macro supervision is provided by liquidity: when a single bank is in trouble, liquidity is not an issue and prudential supervision can be effective. When many are, lending of last resort comes in. The assessment on a single institution by its regulator always comes with an implicit *ceteris paribus* clause on the state of the world:

“Any statement about the liquidity of an institution depends upon assumptions about the behavior of the economy and financial markets. As the assumptions are changed, the estimate of the liquidity of the institutions will vary” (Minsky, 1967).

Basing itself on liquidity risk, the CFOS is not a macro approach neither a micro, it is both. It connects the supervision on banks, on market infrastructures, on markets, supervision and central banking via lending of last resort. A last point on liquidity is that this aspect is also linked to prudential ratios. The mainstay of prudential supervision is made by capital requirements. But, at the end of the day, the bank’s capital is made by liquid assets. This means that the true situation of liquidity (i.e. the marketability of these assets) hugely affects the real capitalization of the banks.

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. This is another example of an old idea defended by Minsky until his death (Ryoo, 2013), derided until the reality had the last laugh. 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” (cit. in Kregel, 2014).

Analyzing liquidity and profitability, Minsky (1967) pointed out the need to deepen the “aggressiveness of the bank in seeking new business”. This is because the profit stabilizing framework also helps to explain the relationship between innovation and regulation. Minsky and Campbell (1988, p. 6) explain:

“The normal, profit-seeking activities of agents lead to innovation in order to create new sources of profits; innovations can be in products, processes or finance. 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”.

Financial innovation is a way to avoid the downward path of profitability, therefore the “repeating stages of regulatory avoidance and re-regulation” (Kane, 1981) are an inevitable component of financial landscape. The more regulated the industry, the more compelling the innovation. Of course, innovation allows the innovator a higher rate of profit but the overall result are quite different. For instance, in the field of risk management Brunnermeier and Sannikov (2014) point out: “Financial innovation that allows experts to hedge their idiosyncratic risk can be self-defeating, as it leads to higher systemic risk”.

The goal of financial regulation vis à vis innovation is to allow a positive development of new business, products, services avoiding the excess of the bubble that comes with them (Kregel,

Tonveronachi, 2014). Minsky (1992a) stated: “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”. It is worth noting the word he used to assess the role of authorities: they should *dominate* the processes, that is not exactly a light-tough approach. In fact, he (1994) explains: “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”. The state is not a detached analyst of financial innovation, it should intervene to give an orientation to operators, for instance in the field of market standards. Minsky is aware that profit-maximization based economy implies that regulation is always left behind: “in a world of businessmen and financial intermediaries who aggressively seek profit, innovators will always outpace regulators” and this was written in 1986, where much of financial deregulation was still to come.

This means that regulation must act to push profits counter-cyclically. This is nothing new, this is also how monetary policy works. If re-regulation fails in stabilizing profits it is useless, as Stephens (2011) put it: “any reform that does not significantly reduce bank profits in the medium to long term will have failed”.

Innovation means bubble and during a bubble financial euphoria also infects regulation. Above all this means a victory of the individual viewpoint. The neglect of systemic risk and macro-prudential supervision before the crisis is part of this trajectory. Happiness, laissez-faire and profits. Herd behaviour and beauty contest hold sway for good, at least on mainstream media and economics literature. Then, all of a sudden the bubble explodes, banks implode and lender of last resort comes into play, banks’ profits go down and need to be saved by public funds. Re-regulation ensues. This means that the crackdown starts precisely when profits are collapsing on their own, forcing policies to rescue profitability one way or another. At the end of the day, this confirms that regulation has the main duty of regulating profits. However we face a trade-off here. As we have seen, innovation rapidly leaves behind regulation, hence a frequent re-assessment of banking regulation is vital. The point is that the re-assessment during the bubble will follow the trend resulting in a light-touch regulation, as was the case before the crisis. We would need a regulation able to resist the bubble, tough exactly when the things are going well. This is very difficult to attain with prudential supervision. This is one of the main reason for what we will propose.

Another consequence of the need for frequent regulatory updating is that the relative importance of rules and principles should change. There is a long-dated debate about the merits of rules-based versus principles-based supervision. Needless to say, rules are rapidly outgrown by innovation. On the contrary, core principles are basically always valid. So banking supervision should be based on principles – such as the *core principles* of the Basel Committee (2012) – more than on detailed rules that should be changed continuously.

What we have seen so far explains why prudential regulation is not very effective to maintain financial stability. It also explains why banking regulation is intrinsically connected to lending of last resort. Tools like deposit insurance are therefore much more important than prudential ratios during the crisis.

### **6.3 Structural supervision and diversity**

A drawback of a regulatory framework based on prudential supervision tools is that, together with concentration, it reduces diversity. This seem counter-intuitive as bigger banks are more diversified. But as Haldane (2010) explains:

“if all banks are fully diversified and hold the market portfolio, that means they are all, in effect, holding the same portfolio. All are subject to the same systematic risk factors. In other words, the system as a whole lacks diversity. Other things equal, it is then prone to generalised, systemic collapse. Homogeneity breeds fragility”

Basel II pushed towards more and more similar banks in term of business model and risk management. So when the crisis struck, the big banks were not a hundred, not even a dozen, but basically a single operator as far as concrete behaviour was concerned: prudential supervision nurtured herd behaviour.

It is now clear that regulation should be oriented to favour diversity, aiming at “ policies that defeat the SIFI monoculture” (Varoufakis, 2013), but how to achieve this result? An idea could be to help small banks like a network of local community development banks as Wray (2011b) explains: “reforms ought to aim for downsizing. This does not necessarily mean a return to Glass-Steagall separation by function, but it does mean that policy should favor small institutions over large ones”. This is correct but is a very slow way to rebalance the market against tbt banks. Anyway, banking regulation should take into account the need to defend diversity and small operators. This means disposing off the “proportionality principle” of Basel II that amounts to a double standard where big banks are carefully monitored and small ones are left alone and cannot aspire to compete with SIFIs.

As international supervision pushed big banks towards herd behaviour, one can ask if an harmonized regulation is good. Moosa (2010, p. 197) observes: “one way forward is to forget about the international harmonization and unification of banking regulation and to leave every country to formulate its own regulation”. This would be a radical break with the last 30 years or so. The simple fact that international regulation is put under scrutiny is a demonstration of how crisis changed things. Relying more on structural supervision, that is eminently un-international, it is a way to do it. But it has also another merit. Defending the Glass-Steagall Act, Minsky (1995) explained: “it was not much the differences in riskiness as it was the ease of understanding the operations that led to the separation of investment and commercial banking”. In other terms: it is paramount to have in place a regulation easy to understand and to apply. Prudential supervision is more difficult to be bended to its aim.

## **7. Re-regulation will not solve long-term issues: the Minskian alternative**

As always, the end of the bubble and the crisis pushed for a rethinking of banking regulation. The proposals go in the right direction, and yet they will not change anything important. There is an unmistakable indicator of it: Wall Street. After the crash of 1929, the Dow Jones took more than 25 years to regain that level. This time it only needed 5 years. This means banks are not very impressed by the crackdown. For good reasons.

Capital requirements, business conducts standards and so on have been tightened, and yet the core issue has not been touched. Big banks still rule world economy. Indeed the domination is even stronger than before the crisis, as they are bigger and more concentrated. A specific regulation on G-SIBs or SIFIs is now more or less in place, they pay higher capital requirements and receive more attention from their regulators (as can be seen by the hefty fees they paid for different reasons) but with no strong effects on their business model and, again, their quotations show that markets are not very frightened by all this attentions.

We think the markets are right. They are not impressed because the measures that have been put



in place to rein in big banks are not impressive. In fact, as Wray (2011b) wrote, “Hyman Minsky would not be impressed”. The issue here is not a higher capitalization, better risk management procedures, efficient living wills or so. The main problem of world financial system nowadays is the disproportioned power of the banks vis à vis the governments. Bigger and bigger banks, weaker and weaker governments. The very existence of SIFIs is tantamount to a subordination of public policies to their needs. They are like giant black holes, so powerful and concentrated that the very fabric of the space around them is completely distorted and bended. This worrying truth is hardly an original idea. For instance, Roubini and Mihm (2010) observe on tbtbf banks “Frankly, they shouldn’t exist – at the very least, they should be pushed to break themselves up”. Many others made similar remarks<sup>14</sup>. Even the IMF (2010) proposed limits on market share or asset size, proposing to add caps on market share to additional capital requirements and leverage ratios. Before we enter in the concrete proposals to tackle the issue, we will discuss why it is so important.

### **7.1 Why too big to fail banks are an issue**

*too big to fail...is the single most important policy issue that has emerged from the crisis – S. Cecchetti*

There are many reasons why the existence of SIFIs is a problem. The first issue is their sheer political power. If we look at other episodes of anti-trust battle between public institutions and big companies we see that the main issue at stake was exactly their political power. This was the case, for instance, behind Teddy Roosevelt “trust-busting campaign” (Stiglitz, 2010). This is also the case now as Johnson (2009) wrote: “Oversize institutions disproportionately influence public policy; the major banks we have today draw much of their power from being too big to fail” (see also Dimsky, 2010 and Kregel 2014).

A second point is that limiting the power of tbtbf also allows for a reduction of the financial sector as a whole. Of course this is a positive goal only if one considers that “the success of the financial sector is not an end in itself, but a means to an end” (Bair, 2012, p. 313). If before the crisis, the growth of finance was considered unilaterally good, now many are aware that a nation can have too much finance (Arcand et al., 2012<sup>15</sup>). Stiglitz commented: “We had too big of a financial sector. In the post-crisis era, the financial sector as a whole will shrink” (Stiglitz et al. 2009). This aspect is linked to innovation because as we noted, innovation yields a growth in the financial sector size. The OTD model has proved this point: the size of finance is not business model independent.

Thirdly, there is a question of market distortion. SIFIs are heavily subsidized by the States, hence have an unfair competitive advantage. For instance, Brewer and Jagtiani (2011) find a subsidy between \$15 billion and \$23 billion for the eight merger beyond \$100 billion in the US in the period 1991-2004. Haldane (2010) observes that “For UK banks, the average annual subsidy for the top five banks ...was over £50 billion - roughly equal to UK banks’ annual profits prior to the crisis. At the height of the crisis, the subsidy was larger still”. Siegert and Willison (2015) collect all the studies on this issue, finding funding cost advantages even if with a wide range (17-80 b.p. for deposits, until 80 b.p. for bonds). A source of unfair advantage is, paradoxically, re-

---

<sup>14</sup> See, for instance, Johnson 2009, Stiglitz 2010, Moosa, 2010, Johnson and Kwak, 2010, R. Fisher 2013, Polouček, 2013; also former central bankers like Bernanke, King and Volcker made similar remarks.

<sup>15</sup> It is worth noting that in this work the finance starts having a negative effect on economic growth when credit to the private sector reaches 100% of GDP, a very low level.

regulation, as we have seen, because a more complex legislation is more costly to be compliant to and tbtfs can face it more easily. For instance, Basel I had 30 pages, Basel II 357, Basel III 616 (R. Fisher, 2013, p. 41). Regulation complexity is a danger in itself. Haldane (2012) noted: “the more complex the environment, the greater the perils of complex control” (see also Minsky, 1995 and Caprio, 2013).

We should also add the problem is growing. When in 1984 the tbtfs acronym was created, in the US alone there were 11 of such banks. Nowadays *globally*, the banks considered systemically important by the international regulators are less than 30.

## **7.2 What to do: a world cap to solve the problem**

*the private market power of giant corporations must be broken* – H.P. Minsky

There is a wide consensus (but not unanimity as we will see) that tbtfs banks are a problem. It is also generally acknowledged that prudential regulation cannot solve this issue. The solution everyone has in mind is to have smaller banks. For instance the Governor of the Dallas Fed Fisher (2013) commented: “The solution for ending “too big to fail” is not bigger government but smaller, unsubsidized banking institutions governed by the market discipline of creditors at risk of loss”. It is clear that to achieve this goal a size cap should apply. We have an example of this cap in the US market, as Goldstein and Veron (2010; see also Powell, 2013, Ötcker-Robe I. et al., 2011) reminds:

“The Dodd-Frank Act of 2010 specifies that any insured depository or systemically important nonbank be prohibited from merging or acquiring substantially all the assets or control of another company if the resulting company’s total consolidated liabilities would exceed 10 percent of the aggregate consolidated liabilities of all financial companies. This liability size-cap would not require any existing US financial institutions to shrink, though, and does not prohibit their organic growth in the future. It parallels and complements a pre-existing cap of 10% of total domestic deposits that cannot be exceeded by some forms of external growth, introduced by the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994”

This GDP-based size cap is a good start but has a problem: it cannot be applied internationally without giving US banks an unfair advantage. Moreover, it can be waived when needed as it was the case during the crisis (Johnson and Kwak, 2010). What is needed is a structural measure that cannot be softened later on, that is simple to understand and easy to enforce on a world scale. Moreover, the measure should be business model independent (Volcker rule or ring-fencing are not). For instance, Johnson (in Stiglitz et al., 2009) noted: “Ideally, big banks should be sold in medium-sized pieces, divided regionally or by type of business, to avoid such a concentration of power”. We think the size cap should give the banks the widest choice on how to break themselves up. We now propose our alternative.

### *A world cap rule*

*The FSB and BCBS issue the following cap rule: a bank cannot have total assets of more than 250 billion SDR (more or less € 320 billion at the date of writing)<sup>16</sup>. The cap will be raised by 5 billion SDR a year. The cap is in absolute values (not risk weighted) and applies at group level. The banks are given a period (say 2 years) to adjust their balance-sheets to the rule or to choose how to divide themselves to comply with the cap.*

The main advantages of the rule are the following.

First of all the problem is solved. Tbtf banks disappear for good very rapidly. Contrarily to prudential supervision or even to structural measures like the Volcker Rule, this rule cannot be softened as banks will be broken up and this means they will start to develop as separate entities strongly increasing competition. Moreover, as government remain the same, the balance of power is hugely pushed away from the big banks.

Secondly, differently from the Glass-Steagall Act or the Volcker Rule, the world cap does not decide how the banks should be organized neither have implicit hypotheses on the riskiness of business models or sectors. It is up to the banks to decide how they want to be in terms of geographical reach, sectors and so on. This helps to raise and maintain their diversity, a decisive feature for financial stability. This also reduces their connection as banks become more and more diverse. Systemic risk is therefore reduced directly and indirectly.

Thirdly, it is the simplest and more transparent rule conceivable. It is not prone to arbitrage or interpretation or national biases. It also allows to eliminate many other rules (basically all the rules on SIFIs).

And finally, banks' organization becomes less complex, easier to manage and to supervise. As for risky behaviour by the top management, their bonuses are linked to the banks size and to its growth. As this size cannot increase for ever, they are not pushed to a policy of growth at all costs.

We will touch now objections to the world cap and why we think they can be overturned.

### **7.3 Objections to a world cap**

A first objections concerns efficiency. Anti anti-trust supporters always noted the power of scale economies to reduce prices and increase consumers' welfare. Now, there are many studies on the scale economies in the banking sector. Most of them find scale economies completely deployed at a very small size. For instance Gambacorta and van Rixtel (2013) cite 12 studies on the issue and the biggest optimal size found is \$ 50 billion apart from one study (on the issue see also Berger et al. 1999, Haldane 2010, Ötoker-Robe I. et al., 2011, Laeven et al., 2014).

This conventional wisdom was reverted by recent studies. In particular, Hughes and Mester (2011) and Wheelock and Wilson (2012) found consistent scale economies at any size. This has dramatic impact on costs: "our back of the envelope estimate suggests that capping the size of the four largest bank holding companies at \$1 trillion would result in an increase in the total cost of

---

<sup>16</sup> Singh (2013) proposes a cap of \$ 1 trillion that we consider too big. A number of scholars and central bankers raised similar ideas (see <http://www.toobighasfailed.org/too-big-to-fail/>).

operating those firms that would exceed their combined profits in each of the four years 2003–06” (Wheelock and Wilson, 2012). All in all they found major costs of around \$ 80 billion a year. This seems a big number, but we should consider the \$ 14 trillion needed to save US and EU banks (Haldane, 2009a). Even if we split the bill in two (excluding Europe), this is almost 90 times the major costs found by Wheelock and Wilson. The world cap seems a good deal for tax-payers after all. However, this is exactly the point. Is it possible that there are positive externalities in big banks but they all end in shareholders and top managers pockets while negative externalities in term of systemic risk etc., are paid by all. So, “The benefit from larger scale must be balanced against the increased risk to the financial system and the increased risk of political/regulator capture that comes with size and power” (Powell, 2013). In fact, what kind of efficiency is that of big banks? The same authors state:

“Although our approach can provide information about the extent of cost economies in banking, it does not address such questions as whether increased bank scale affects the costs incurred by bank customers, the risks incurred by banks, or the risks that the banking system may impose on society more broadly”

Exactly. As Laeven et al. (2014) noted analyzing those papers: “Large banks are riskier than smaller ones”. Data prove the point conclusively. For instance: “In the course of the crisis, more than two thirds of the 100 leading banks worldwide received state support” (FSB, 2011a). A strange efficiency indeed. If dimension would help diversification of risks, big banks would have been the strongest during the crisis. This was not the case and it is also replies to the idea that dismantling big banks can be rejected as “disproportionate” (FSB, 2011a).

But there is another consideration that can easily overturn the infinite scale efficiency argument. If we take car industry we find that there are no small players (excluding very specific segments of no general interest, say, ultra-luxury cars). This is because scale economies are a structural feature of the sector. On the contrary, although big banks are heavily subsidized by the States, have cost advantages and so on, there are small and medium banks that survive nicely. This would be impossible if scale economies were so overwhelming.

There is a third important counter-objection. Efficiency is good if the outcome of the productive process we are studying is positive. For instance, we cannot deny that the mafia is more efficient than a single drug pusher. Is it good for society? The problem is that “Most of what the financial sector is now doing is actually harmful” (Wray, 2011b). A discussion about banks’ efficiency cannot overlook this aspect.

A second objection to the world cap is that it could stifle innovation. Now, it has been noted that “a disproportionate part of the innovations in our financial system were aimed at tax, regulatory, and accounting arbitrage. They did not produce innovations which would have helped our economy manage some critical risk better, like the risk of home ownership. In fact, their innovations made things worse” (Stiglitz et al., 2009). Moreover, data suggests that innovation is made by firms of all size.

Another and more compelling issue is political feasibility (Stiglitz, 2010). For instance, the former Chairman of the FDIC Bair (2012, p. 327) observed: “Though I’m sympathetic to that viewpoint, I do not believe Congress has the political will to take that step”. This was true also for deposit insurance in 1933. Even FDR was frightened by the US banks opposition to it but at the end he had the political courage to stand the ground (Greider, 1987). A similar objection is that “any such measure would need to be internationally coordinated and this is unlikely in practice” (Llewellyn in Dombret and Lucius eds., 2013, p. 375). But what about Basel II or Basel III? They

are regulations of immense complexity and yet they have been agreed at the international level. By the same token, objections based on the fact that a size cap “may be imprecise and difficult to implement” (Laeven et al., 2014) are not impressive. How much more complex and difficult to implement is Basel III? And yet...

A fourth issue, linked to scale economies, is that international groups have centralized key functions (CEBS 2010) that it is not clear how will end after a break-up. The answer is that banks are very good at finding ways to cut costs, so they will adopt a consortium model or a part of the former big bank will become a firm specialized to offer IT and other services to the other banks just like it is now the case for custodian banks, cash management operators and so on. Sharing services and clients among banks (think at syndicated loans) is also the answer to the objection that big banks are needed to serve big clients.

Other objections are that there are concentrated systems that did not fail (Goldstein and Veron, 2010) and an industry made by small banks that did for the “too many to fail” issue (Fischer, 2014). In other terms, as banks of all types failed, there is no point in singling out the tbtf (Llewelyn in Dombret and Lucius eds., 2013). However these are not very strong objections. It is true that all dogs can bite, but you can feel the difference if it is a bullmastiff that bites you instead of a Chihuahua:

“SIFIs are a different kind of bank in terms of systemic risk and “interconnectedness”. Dozens of small banks can fail with no significant increase in the probability of default of others, but a single mega bank’s demise is enough to shake the other big banks and the entire system. While for a small/medium-sized intermediary what matters most is the average situation of its competitors, for SIFIs what really matters is the situation of the worst among them. Small banks are like a colony of penguins: even if many of them are killed, the colony survives. SIFIs are like a group of climbers roped together, if one falls, the others follow. The very existence of a SIFI is a negative externality for other SIFIs and for the entire world. The problem is getting worse, since this externality is often internalized through M&As, creating a dwindling number of ever larger conglomerates. A tool is needed to address this basic contradiction.” (Esposito, 2013<sup>17</sup>)

All in all, we think objections to a size cap are not unassailable while the effects it would have on the financial landscape are pervasive and decisive.

## 8. Conclusions

The crisis shattered the conventional wisdom about how financial markets work and how to regulate them. Authorities intervened to stop the panic basing on pragmatism that is an implicit total rejection of mainstream economics. The relationship between academia and central banks is in a limbo. This is what happened in the 30s, as “the essential reforms of the United States’ financial system predate *The General Theory*” (Minsky, 1992a). However, the very success in taming the collapse reduced the efforts to change radically the banks business model.

In this work we have tried to explain the main trends of financial system and their effects on banking regulation. We also underlined the good and the bad of re-regulation and, above all, its main paradox, that is the following: if reforms do not change banks behaviour, hence their profitability, are useless. If they do, they will push them towards financial innovation to remedy the downtrend. Therefore, the pessimistic conclusion: banking regulation is either useless or self-

---

<sup>17</sup> In this work there is an analysis of the main measures taken to tackle (not effectively) the tbtf banks problem and a proposal to force them to share their fate (the “SIFI Stability Fund”).

defeating. Is there any alternative to this conclusion?

Minsky (1992a) observed that “Supervision and regulation are ways to protect the government against the call of the Treasury”. In other words, at its best, banking regulator can be compared to the Greek mythological character Sisyphus with the regulation taking the place of the rock: just when it is at its maximum height, the profits need of the banks inflate a bubble and throw the rock-regulation down the hill. So the authorities have the goal “to delay the onset of instability and to contain the effects of instability” (Minsky, 1992a). This metaphor enlightens the theory and practice of banking regulation. The rock will inevitably fall down but it can be a huge avalanche or the fall of scattered stones.

Our proposal to change banking supervision changes the Sisyphus’ works because the world cap is the only regulatory tool that can radically transform market concentration. Its application would amount to transform the Sisyphus gigantic rock in a bunch of pebbles. The alternative is to leave big banks to transform world economy in pebbles again. As Roseblum observed: “The ultimate destination-an economy relatively free from financial crises-won’t be reached until we have the fortitude to break up the giant banks”.

We don’t want to seem sharing the hubris of Sisyphus so we do not reduce the needs of banking supervision to our world cap. However, the other goals cannot be achieved without this precondition. In particular, there are three aspects we would like to underline.

The first one is the need for a stronger diversity in the banking system, a paramount issue that is intractable as long as big banks are interested in growing alike. No specific prudential tools can cure this issue and also structural measures like the Volcker rule do not push for bigger diversity. The call of Minsky and others for a bigger role for local community development banks (Minsky et al., 1993) is theoretically and practically right, the question is that presently they cannot compete fairly with big banks. CDBs are like mammals during the Jurassic period, at the fringe of the ecosystem. They needed the extinction of dinosaurs to start becoming important.

The second point is short-termism. Big banks want to grow because this means more money for shareholders and the top management. Their business model is based on immediate results in term of profits whatever it implies later on. Short-termism and bubble seeking is perfectly rational for them. To align CEOs and society incentives, this thirst for growth should be phased out. If the regulatory framework is not able to change the way banks maximize their profitability, i.e. to drive banks towards a different conception of what credit is and what is their responsibility towards their communities, it is ineffective to say the least.

The third point is ownership. Before the crisis public-owned banks were considered relics of the past and emerging economies were asked to follow the good example of advanced countries i.e. to privatize them (Hawkins and Mihaljek, 2001). Now the situation is more balanced. However, the formal property of the banks does not change *per se* how they behave, like an analysis of what happened after 2008 to nationalized banks can easily show. The issue is a different mission for them based on the idea of using the public part of banking sector to maintain stability and to foster economic growth instead of increasing profitability as a goal in itself (Brown, 2014). But even with public banks, in order to give them orders and not the other way round, the state should have the upper hand. This is very difficult when the bank has a balance sheet with a dimension comparable to the state GDP itself. There is also, of course, an issue of level playing field with private-owned banks. For these reasons, a world cap is needed also for public banks.

Putting these three point together we can state that a world cap is a necessary step to re-

conceptualize banking as having a strong public dimension. As Brown (cit.) observes: “money and credit are not market goods, but economic infrastructure, just as roads and bridges are physical infrastructure”. Mainstream theory tries to capture this feature via systemic risk analysis, banking regulation via macroprudential supervision, but much more is at stake.

To retake the biological metaphor we used before, a world size cap is like a big asteroid hitting the planet. It would be an havoc for the banks presently ruling the world economy but a positive shock from the rest of us.

## 9. Bibliography

- Acharya V.V. et al. 2010. *Measuring Systemic Risk*, Federal Reserve of Cleveland WP 1002 (<https://www.clevelandfed.org/~media/Files/Working%20Papers/wp2010/wp1002-measuring-system-risk.pdf?la=en>)
- Admati A. Helwig M. 2013. *Bankers' new clothes*, Princeton University Press, Princeton (NJ)
- Allen F. Carletti E. Marquez R. 2009. *Credit Market Competition and Capital Regulation*, Economic WP EUI
- Allen F., Gale D. 2004. *Competition and Financial Stability*, “Journal of Money, Credit & Banking”, vol. 36
- Alvaredo F. et al., 2013. *The Top 1 Percent in International and Historical Perspective*, NBER WP 19075 (<http://www.nber.org/papers/w19075>)
- Arcand J., Berkes E., Panizza U. 2012. Too much finance?, IMF WP 12/161 (<http://www.imf.org/external/pubs/ft/wp/2012/wp12161.pdf>)
- Arnold B. et al. 2012. *Systemic risk, macroprudential policy frameworks, monitoring financial systems and the evolution of capital adequacy*, “Journal of Banking & Finance” Vol. 36
- Atkinson A.B., Morelli S. 2010. *Inequality and Banking Crises: A First Look*, Paper prepared for the Global Labour Forum in Turin organised by the International Labour Organization (<http://isites.harvard.edu/fs/docs/icb.topic457678.files/ATKINSON%20paper.pdf>)
- Bair S. 2012. *Bull by the horns*, Simon and Schuster, New York (NY)
- Bank of England 2010. *Financial Stability Report*, June (<http://www.bankofengland.co.uk/publications/Documents/fsr/2010/fsrfull1006.pdf>)
- Battiston S. et al. 2012. *Liaisons dangereuses: Increasing connectivity, risk sharing, and systemic risk*, “Journal of Economic Dynamics & Control”, 36
- Bayoumi et al. 2014. *Monetary Policy in the New Normal*, IMF Staff Discussion Notes No. 14/3 (<https://www.imf.org/external/pubs/ft/sdn/2014/sdn1403.pdf>)
- BCBS 1996. Amendment to the Capital Accord to incorporate Market Risk (<http://www.bis.org/publ/bcbs24.pdf>)
- BCBS 2012. *Core Principles for Effective Banking Supervision*, (<http://www.bis.org/publ/bcbs230.pdf>)
- Bellamy Foster J., Magdoff F. 2008. *Financial Implosion and Stagnation, Back To The Real Economy*, “Monthly Review” (<http://monthlyreview.org/2008/12/01/financial-implosion-and-stagnation/>), Decemblers
- Bellino E. 2010. *Employment and Income Distribution from a Classical-Keynesian Viewpoint*, Centro Ricerche Piero Sraffa, Roma
- Bellofiore R. Ferri P. (eds.) 2001. *Financial Keynesianism and market instability: the economic legacy of Hyman Minsky*, Vol. 1, Cheltenham, UK ; Northampton, Mass. : Edward Elgar
- Berger A. N., Klapper L.F., Turk-Ariss R. 2008. *Bank Competition and Financial Stability*, [World Bank Policy Research WP 4696](http://www.worldbank.org/policyresearch/wp4696)
- Berger A., Demsetz R., Strahan P. 1999. *The Consolidation of the Financial Services Industry: Causes, consequences, and implications for the future*, “Journal of Banking and Finance”, vol. 23

Bernanke B., 2014. *La Federal Reserve e la crisi finanziaria*, Il Saggiatore, Milano

Better Markets. 2012. *The cost of Wall Street-caused Financial Collapse*, ([http://bettermarkets.com/sites/default/files/Cost%20Of%20The%20Crisis\\_2.pdf](http://bettermarkets.com/sites/default/files/Cost%20Of%20The%20Crisis_2.pdf))

Bijlsma M. et al. 2010. *Systemic risk in the financial sector. A review and synthesis*, Centraal PlanBureau Document n. 210

BIS 2009. *79<sup>th</sup> Annual Report*, Basel, (<http://www.bis.org/publ/arpdf/ar2009e.htm>)

BIS 2010. *80<sup>th</sup> Annual Report*, Basel, (<http://www.bis.org/publ/arpdf/ar2010e.htm>)

BIS 2011. *81<sup>th</sup> Annual Report*, Basel, (<http://www.bis.org/publ/arpdf/ar2011e.htm>)

Blinder A.S. 2010. *It's Broke, Let's Fix It: Rethinking Financial Regulation*, "International Journal of Central Banking", December

Bolt W., Tieman A.F. 2004. *Banking Competition, Risk, and Regulation*, IMF WP 04/11 (<http://www.imf.org/external/pubs/ft/wp/2004/wp0411.pdf>)

Boot A.W. Marinč M. 2007. *Competition and Entry in Banking: Implications for Stability and Capital Regulation*, CEPR Discussion Paper 5518

Borio C., Tsatsaronis K. 2005. *Accounting, prudential regulation and financial stability: elements of a synthesis*, BIS WP 180 (<http://www.bis.org/publ/work180.pdf>)

Boyd J.H., De Nicolò G., Jalal A.M. 2006. *Bank Risk-Taking and Competition Revisited: New Theory and New Evidence*, IMF WP 06/297 (<http://www.imf.org/external/pubs/ft/wp/2006/wp06297.pdf>)

Boz E., Mendoza E. G. 2010. *Financial Innovation, the Discovery of Risk, and the U.S. credit crisis*, NBER WP 16020 (<http://www.nber.org/papers/w16020>)

Brancaccio E., Fontana G. 2011. *The Conventional Views of the Global Crisis: A Critical Assessment* in Arestis P. et al. (eds.), *The Financial Crisis: An Assessment of the Global Impact of the Financial Crisis*, Palgrave Macmillan, Basingstoke (UK),

Brei M., Gambacorta L., von Peter G. 2011. *Rescue Packages and Bank Lending*, BIS WP 357 (<http://www.bis.org/publ/work357.pdf>)

Brewer E. III, Jagtiani J., 2011. *How much did Banks pay to become Too-big-to-fail and to become Systemically Important?* Federal Reserve Bank of Philadelphia Supersedes WP 09-34 (<https://www.philadelphiafed.org/research-and-data/publications/working-papers/2011/wp11-37.pdf>)

Brown E. 2014. *The Public Bank Solution*, Binzagr Institute for Sustainable Prosperity Policy Note 101 (<http://www.binzagr-institute.org/policy-note-101/>)

Brunnermeier M. et al. 1999. *The Fundamental Principles of Financial Regulation* (Geneva Reports on the World Economy), International Center for Monetary and Banking Studies, Geneva

Caballero R.J., Krishnamurthy A. 2007. *Collective Risk Management in a Flight to Quality Episode*, NBER WP 12896 (<http://www.nber.org/papers/w12896>)

Calomiris C.W., Haber S.H. 2014. *Fragile by Design. The Political Origins of Banking Crises & Scarce Credit*, Princeton University Press, Princeton (NJ)

Calomiris C.W., 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, Vol. 25 Issue 2

Caprio G. Jr. 2013. *Financial Regulation After the Crisis: How Did We Get Here, and How Do We Get Out?*, LSE Special Paper 226 (<http://www.lse.ac.uk/fmg/workingPapers/specialPapers/PDF/sp226.pdf>)

Caverzasi E. 2013. *The missing macro link*, The Jerome Levy Economics Institute WP 753, Annandale-on-Hudson, NY, ([http://www.levyinstitute.org/pubs/wp\\_753.pdf](http://www.levyinstitute.org/pubs/wp_753.pdf))

CEBS. 2010. *Guidelines for the joint assessment of the elements covered by the supervisory review and evaluation process (SREP) and the joint decision regarding the capital adequacy of cross border groups (CP39)* (<http://www.eba.europa.eu/documents/10180/37070/CP39.pdf>)

Cecchetti S. Kharroubi E. 2015. *Why does financial sector growth crowd out real economic*



growth?, BIS WP 490 (<https://www.bis.org/publ/work490.htm>)

Cerutti E. et al. 2012. *Systemic Risks in Global Banking: What Can Available Data Tell Us and What More Data Are Needed?*, BIS WP 376 (<http://www.bis.org/publ/work376.pdf>)

Chan-Lau J.A. 2011. *Fat-Tails and their (Un)Happy Endings: Correlation Bias and its Implications for Systemic Risk and Prudential Regulation*, IMF Working Paper 11/82 (<https://www.imf.org/external/pubs/ft/wp/2011/wp1182.pdf>)

Ciocca P. 2014. *La banca che ci manca*, Donzelli Editore, Rome

Corbisiero G., Musella M. 1997. *Controllo dell'offerta di moneta. Stabilità del sistema finanziario ed equilibrio macroeconomico nell'analisi dei postkeynesiani: una critica alla distinzione tra accomodazionisti e strutturalisti*, "Studi e Note di Economia" 2/97 129

Crockett A. 1997, *The Theory and Practice of Financial Stability*, Essays in International Finance, no. 203 ([http://aulavirtual.bde.es/wav/documentos/area\\_docu\\_estabilidad\\_1.pdf](http://aulavirtual.bde.es/wav/documentos/area_docu_estabilidad_1.pdf))

Crotty J., 2008. *Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture'*, UMASS Amherst WP n. 14, University of Massachusetts Amherst, Department of Economics ([http://www.peri.umass.edu/fileadmin/pdf/conference\\_papers/SAFER/Crotty\\_Structural.pdf](http://www.peri.umass.edu/fileadmin/pdf/conference_papers/SAFER/Crotty_Structural.pdf))

D'Amato J.D.A., Furfine C.H. 2003. Are credit ratings procyclical?, BIS WP 129 (<http://www.bis.org/publ/work129.pdf>)

Degasperi G., 1999. *La dinamica delle crisi finanziarie: i modelli di Minsky e Kindleberger*, Alea – Università di Trento Tech Report n. 5, Trento

Demirguc-Kunt A., Huizinga H. 2011. *Do we need big banks? Evidence on performance, strategy and market discipline*, Discussion Paper, CEPR n. 8276

Diamond D.W., Rajan R.G. 2001. *Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking*, "Journal of Political Economy", vol. 109, n.2

Dimsky G. 2010, *The Global Crisis and the Governance of Power in Finance* (<http://www.ie.ufrj.br/datacenterie/pdfs/seminarios/pesquisa/texto1008.pdf>)

Dobbs R., et al. 2015. *Debt and not much deleveraging*, McKinsey, ([http://www.mckinsey.com/insights/economic\\_studies/debt\\_and\\_not\\_much\\_deleveraging/](http://www.mckinsey.com/insights/economic_studies/debt_and_not_much_deleveraging/))

Dombret A., Lucius O. (eds.) 2013, *Stability of the Financial System. Illusion or Feasible Concept?*, Edward Elgar, Cheltenham (UK)

Drehmann M. et al. 2010. *Countercyclical capital buffers: exploring options*. BIS WP 317 (<http://www.bis.org/publ/work317.pdf>)

ECB 2010, *Financial Stability Review*, June (<https://www.ecb.europa.eu/pub/pdf/other/financialstabilityreview201006en.pdf?e4a98829604731bb5628a660af1a756c>)

Esposito L. 2005. *I rischi e gli obiettivi della vigilanza finanziaria. Il caso della FSA inglese*, "Bancaria" gennaio

Esposito L. 2013. *Connect them where it hurts. The missing piece of the puzzle*, Questioni di Economia e Finanza della Banca d'Italia 151, ([http://www.bancaditalia.it/pubblicazioni/qef/2013-0151/QEF\\_151.pdf?language\\_id=1](http://www.bancaditalia.it/pubblicazioni/qef/2013-0151/QEF_151.pdf?language_id=1))

European Commission 2009. *An EU Framework for Cross-Border Crisis Management in the Banking Sector*, ([http://ec.europa.eu/internal\\_market/bank/docs/crisis-management/091020\\_communication\\_en.pdf](http://ec.europa.eu/internal_market/bank/docs/crisis-management/091020_communication_en.pdf))

Evanoff, D.D., Hoelscher D.S., and Kaufmann G. (eds.) 2009. *Globalization and Systemic Risk Systemic Risk and Prudential Regulation in the Global Economy*, World Scientific Publishing, Singapore

Fischer S. 2014. *Financial Sector Reform: How Far Are We?*, Martin Feldstein Lecture, NBER (<http://www.federalreserve.gov/newsevents/speech/fischer20140710a.htm>)

Fisher I. 1933. *The Debt Deflation Theory of Great Depressions* (<https://fraser.stlouisfed.org/docs/meltzer/fisdeb33.pdf>)

Fisher R.W. 2013, *Annual Report, Letter from the President*, Federal Reserve Bank of Dallas

(<http://www.dallasfed.org/microsites/fed/annual/2012/ar12a/index.cfm>)

Foley D.F. 2010. *Hyman Minsky and the dilemmas of contemporary economic method* in Bellofiore R. Ferri P. (eds.) 2001. *Financial Keynesianism and Market Instability*, Edward Elgar

Fostel A., Geanakoplos J., 2008. *Leverage Cycles and the Anxious Economy*, Cowles Foundation Paper n. 1233

Freixas X., Rochet J.C. 2008. *Microeconomics of Banking*. Cambridge The MIT Press, Cambridge (MA)

French, K. et al. 2010. *Squam Lake Report: Fixing the Financial System*, Princeton University Press, Princeton (NJ)

FSA 2009. *The Turner Review. A regulatory response to the global banking crisis*, ([http://www.fsa.gov.uk/pubs/other/turner\\_review.pdf](http://www.fsa.gov.uk/pubs/other/turner_review.pdf))

FSB 2010. *Intensity and Effectiveness of SIFI Supervision Recommendations for enhanced supervision* ([http://www.financialstabilityboard.org/wp-content/uploads/r\\_101101.pdf?page\\_moved=1](http://www.financialstabilityboard.org/wp-content/uploads/r_101101.pdf?page_moved=1))

FSB 2010. *Reducing the moral hazard posed by systemically important financial institutions*, ([http://www.financialstabilityboard.org/wp-content/uploads/r\\_101111a.pdf?page\\_moved=1](http://www.financialstabilityboard.org/wp-content/uploads/r_101111a.pdf?page_moved=1))

FSB 2011a. *Consultative Document Effective Resolution of Systemically Important Financial Institutions. Recommendations and Timelines*, (<http://www.cbrc.gov.cn/chinese/files/2011/20110818EF31DECC5BB3200BFFC2D9A840A51E00.PDF>)

FSB 2011b. *Policy Measures to Address Systemically Important Financial Institutions*, ([http://www.financialstabilityboard.org/wp-content/uploads/r\\_111104bb.pdf?page\\_moved=1](http://www.financialstabilityboard.org/wp-content/uploads/r_111104bb.pdf?page_moved=1))

FSB 2013. *Progress and Next Steps Towards Ending “Too-Big-To-Fail” (TBTF)*, ([http://www.financialstabilityboard.org/wp-content/uploads/r\\_130902.pdf](http://www.financialstabilityboard.org/wp-content/uploads/r_130902.pdf))

Galati G., Moessner R. 2011. *Macprudential policy – a literature review*, BIS WP n. 337, (<http://www.bis.org/publ/work337.pdf>)

Galbraith J. K. 2001. *The Essential Galbraith*, Houghton Mifflin Company, Boston (MA)

Gambacorta, L., Van Rixtel A. 2013. *Structural bank regulation initiatives: approaches and implications*, BIS WP 412 (<http://www.bis.org/publ/work412.pdf>)

García-Palacios H. et al. 2014. *Banking crises and government intervention*, “Journal of Financial Stability” 15

Goldstein M., Veron N. 2010. *Too Big To Fail: The Transatlantic Debate*. Bruegel and the Peterson Institute for International Economics

Gordy M.B., Howells B. 2004. *Procyclicality in Basel II: Can We Treat the Disease Without Killing the Patient?*, ([https://www.bis.org/bcbs/events/rtf04gordy\\_howells.pdf](https://www.bis.org/bcbs/events/rtf04gordy_howells.pdf))

Greenspan A. 2007. *The Age of Turbulence*, Penguin Press, New York (NY)

Greider W. 1987. *Secrets of the Temple*, Simon & Schuster, New York (NY)

Guttman R., Plihon D. 2010, *Consumer Debt and Financial Fragility*, “International Review of Applied Economics” n. 5

Haldane A.G. et al. 2007. *A new approach to assessing risks to financial stability*, Financial Stability Paper No. 2 Bank of England, ([http://www.bankofengland.co.uk/research/Documents/fspapers/fs\\_paper02.pdf](http://www.bankofengland.co.uk/research/Documents/fspapers/fs_paper02.pdf))

Haldane A.G. 2009a. *Banking on the State*, BIS Review 139 (<http://www.bis.org/review/r091111e.pdf>)

Haldane A.G. 2009b. *Why banks failed the stress test*, BIS Review 18 (<http://www.bis.org/review/r090219d.pdf>)

Haldane A.G. 2009c. *Rethinking the financial network*, Speech at the Financial Student Association Amsterdam, (<http://www.bankofengland.co.uk/archive/Documents/historicpubs/speeches/2009/speech386.pdf>)

Haldane A.G. 2010. *The \$100 Billion Question*, Comments given at the Institute of Regulation & Risk, Hong Kong, 30 March

(<http://www.bankofengland.co.uk/archive/Documents/historicpubs/news/2010/036.pdf>)

Hawkins J., Mihaljek D. 2001. *The banking industry in the emerging market economies: competition, consolidation and systemic stability*, BIS Paper 4 (<http://www.bis.org/publ/bppdf/bispap04.pdf>)

Hein E. 2013. *Finance-dominated Capitalism and Redistribution of Income: A Kaleckian Perspective*, The Levy Economics Institute of Bard College WP 746, Annandale-on-Hudson, NY ([http://www.levyinstitute.org/pubs/wp\\_746.pdf](http://www.levyinstitute.org/pubs/wp_746.pdf))

Hetzl R. L. 1991. *Too Big to Fail: Origins, Consequences, and Outlook*, “Federal Reserve Bank of Richmond Economic Review”, 77:6

Holmstrom B., Tirole J. 1997. *Financial Intermediation, Loanable Funds, and the Real Sector*, “The Quarterly Journal of Economics”, Vol CXII, Issue 3

Huertas T.F., 2015, *A resolvable bank* in Scott K. Taylor J. (eds.) *Making Failure Feasible: How Bankruptcy Reform Can End Too Big to Fail*, Stanford University Press

Hughes J.P. Mester L.J. 2011. *Who Said Large Banks Don't Experience Scale Economies?*, Federal Reserve Bank of Philadelphia WP 11-27 (<https://www.philadelphiafed.org/research-and-data/publications/working-papers/2011/wp11-27.pdf>)

IMF 2010. *Global Financial Stability Report. Meeting New Challenges to Stability and Building a Safer System*, April (<http://www.imf.org/external/pubs/ft/gfsr/2010/01/pdf/text.pdf>)

IMF 2011. *World Economic Outlook*, September (<http://www.imf.org/external/pubs/ft/weo/2011/02/pdf/text.pdf>)

Jakab Z. Kumbhof M. 2015. *Banks are not intermediaries of loanable funds — and why this matters*, BoE WP529, (<http://www.bankofengland.co.uk/research/Documents/workingpapers/2015/wp529.pdf>)

Jiménez G., Lopez J.A., Saurina J. 2007. *How Does Competition Impact Bank Risk-Taking?*, Federal Reserve Bank of San Francisco, WP 2007-23 (<http://www.frbsf.org/publications/economics/papers/2007/wp07-23bk.pdf>)

Johnson S. 2009. *The Quiet Coup*, (<http://www.theatlantic.com/magazine/archive/2009/05/the-quiet-coup/307364/>)

Johnson S., Kwak J. 2010. *13 Bankers. The Wall Street Takeover and the Next Financial Meltdown*, Pantheon Books, New York (NY)

Kalecki M. 1975. *Selected Essays on the Dynamics of the Capitalistic Economy, 1933-1970*, Cambridge University Press, Cambridge

Kane E.J. 1981. *Accelerating Inflation, Technological Innovation, and the decreasing Effectiveness of Banking Regulation* NBER WP N. 638 (<http://www.nber.org/papers/w0638.pdf>)

Kashyap A.K., Stein J.C. 2004. *Cyclical implications of the Basel II capital standards*, “Journal of Economic Perspectives”, n. 1

Kaufman G. G. 2002. *Too big to fail in banking: What remains?*, “The Quarterly Review of Economics and Finance” 42

Kay, J. 2009. *Narrow Banking: The Reform of Banking Regulation*, Centre for the Study of Financial Innovation, (<http://www.johnkay.com/wp-content/uploads/2009/12/JK-Narrow-Banking.pdf>)

Keynes J. M. 1936, *The General Theory of Employment, Interest and Money*, in *The Collected Writings*, Vol. VII, London, Macmillan, 1973 edition

Kindleberger C. P. 2005. *Manias, Panics and Crashes*, MacMillan, London

Kling A. 2009. *Not what they had in Mind: A History of Policies that Produced the Financial Crisis of 2008*, Mercatus Center

Kohn D. L. 2009. *Comments on Hyun Song Shin paper Financial intermediation and the post-crisis financial system*

Korinek A., Kreamer J. 2014. *The Redistributive Effects of Financial Deregulation: Wall Street versus main street*, BIS WP 468 (<http://www.bis.org/publ/work468.pdf>)

Kotlikoff L.J. 2011. *Jimmy Stewart Is Dead: Ending the World's Ongoing Financial Plague with*

*Limited Purpose Banking*, Wiley

Kovacevich R., 2014. *The Financial Crisis: Why the Conventional Wisdom Has It All Wrong*, "The Cato Journal", Vol. 34, N. 3

Kregel J. 2010. *No Going Back: Why We Cannot Restore Glass-Steagall's Segregation Of*

*Banking And Finance*, The Levy Institute The Levy Economics Institute of Bard College, Annandale-on-Hudson (NY), (<http://www.levyinstitute.org/publications/no-going-back-why-we-cannot-restore-glass-steagalls-segregation-of-banking-and-finance>)

Kregel J. 2012. *Using Minsky to Simplify Financial Regulation*, The Levy Economics Institute of Bard College ([http://www.levyinstitute.org/pubs/rpr\\_04\\_12\\_kregel.pdf](http://www.levyinstitute.org/pubs/rpr_04_12_kregel.pdf))

Kregel J. 2014. *Minsky and Dynamic Macprudential Regulation*, The Levy Economics Institute of Bard College Public Policy Brief 131, Annandale-on-Hudson (NY) ([http://www.levyinstitute.org/pubs/ppb\\_131.pdf](http://www.levyinstitute.org/pubs/ppb_131.pdf))

Kregel J., Tonveronachi M. 2013. *Fundamental Principles of Financial Regulation and Supervision*, FESSUD WP n. 29 (<http://fessud.eu/wp-content/uploads/2013/04/Fundamental-principles-of-financial-regulation-and-supervision-Working-paper-29.pdf>)

Kumhof M., Rancière R. Winant P. 2015. "Inequality, Leverage, and Crises", *American Economic Review*, Vo. 105 No. 3 (March 2015)

Laeven L., Ratnovski L., Tong H., 2014. *Bank Size and Systemic Risk*, International Monetary Fund Staff Discussion Note 1404, May (<http://www.imf.org/external/pubs/ft/sdn/2014/sdn1404.pdf>)

Lapavistas C., 2008. *Financialised Capitalism. Direct Exploitation and Periodic Bubbles*, Department of Economics SOAS, University of London, mimeo (<http://www.leftlibrary.com/lapavistas1.pdf>)

Lastra R. M., Wood G. 2010. *The crisis of 2007–09: nature, causes, and reaction.*, "Journal of International Economic Law" 13:3

Loranth G. Sciubba E. 2000. *Bank's Size, Risk and Competition*, *Discussion paper in economics / Birkbeck College, University of London* 24

Marotta G. Pittaluga G.B. (eds.) 1993. *La teoria degli intermediari bancari*, Il Mulino, Bologna

McLeay M. et al. 2014. *Money creation in the modern economy*, "Bank of England Quarterly Bulletin", 1-2014 (<http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q1prereleasemoneycreation.pdf>)

Merton R.C. 1995. *A Functional Perspective of Financial Intermediation*, "Financial Management", Vol. 24, No. 2

Miao J. Wang P. 2014. "Sectoral bubbles, misallocation, and endogenous growth", *Journal of Mathematical Economics*, 53

Minsky H.P. 1966. *Cash Flow Examination Procedures for Banks*, Hyman P. Minsky Archive. Paper 134 ([http://digitalcommons.bard.edu/hm\\_archive/134](http://digitalcommons.bard.edu/hm_archive/134))

Minsky H.P. 1967. *Suggestions for a Cash Flow Oriented Bank Examination*, Hyman P. Minsky Archive Paper 175 ([http://digitalcommons.bard.edu/hm\\_archive/175](http://digitalcommons.bard.edu/hm_archive/175))

Minsky H.P. 1975. *The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to "Standard Theory"*, Hyman P. Minsky Archive Paper 38 ([http://digitalcommons.bard.edu/hm\\_archive/38/](http://digitalcommons.bard.edu/hm_archive/38/))

Minsky H.P. 1982a. *Can "It" Happen Again? A Reprise*, Minsky Archive. Paper 155 ([http://digitalcommons.bard.edu/hm\\_archive/155/](http://digitalcommons.bard.edu/hm_archive/155/))

Minsky H.P. 1982b. *Can 'It' Happen Again? Essays on Instability and Finance*, M.E. Sharpe, New York

- Minsky H.P. 1986a. *Global Consequences of Financial Deregulation*, Hyman P. Minsky Archive. Paper 378, ([http://digitalcommons.bard.edu/hm\\_archive/378](http://digitalcommons.bard.edu/hm_archive/378))
- Minsky H.P. 1986b. *Stabilizing an Unstable Economy*, Yale University Press, New Haven (Conn.)
- Minsky H.P. 1990. *Banking Reform and the Resumption of Sustained Growth*, [http://digitalcommons.bard.edu/hm\\_archive/97](http://digitalcommons.bard.edu/hm_archive/97)
- Minsky H.P. 1992a. *Financial Instability and APT Bank Supervision*, Hyman P. Minsky Archive Paper 47 ([http://digitalcommons.bard.edu/hm\\_archive/470](http://digitalcommons.bard.edu/hm_archive/470))
- Minsky H.P. 1992b. *Reconstituting the United States' Financial Structure: Some fundamental Issues*, The Jerome Levy Economics Institute WP 69, Annandale-on-Hudson, NY
- Minsky H.P. 1994. *Issues in Bank Regulation and Supervision*, Hyman P. Minsky Archive. Paper 72 ([http://digitalcommons.bard.edu/hm\\_archive/72](http://digitalcommons.bard.edu/hm_archive/72))
- Minsky H.P. 1994. *Regulation and Supervision*, Hyman P. Minsky Archive. Paper 443 ([http://digitalcommons.bard.edu/hm\\_archive/443](http://digitalcommons.bard.edu/hm_archive/443))
- Minsky H.P. 1995. *Reforming Banking in 1995: Repeal of the Glass Steagall Act, Some Basic Issues*, Hyman P. Minsky, Archive, Paper 59, ([http://digitalcommons.bard.edu/hm\\_archive/59](http://digitalcommons.bard.edu/hm_archive/59))
- Minsky H.P., Campbell G. 1988. *Getting off the Back of a Tiger: The Deposit Insurance Crisis in the United States*, Hyman P. Minsky Archive. Paper 67 ([http://digitalcommons.bard.edu/hm\\_archive/67](http://digitalcommons.bard.edu/hm_archive/67))
- Minsky, H.P. 1996. *Uncertainty and the Institutional Structure of Capitalist Economies*, The Levy Economics Institute of Bard College WP 155, Annandale-on-Hudson (NY), (<http://www.levyinstitute.org/pubs/wp155.pdf>)
- Minsky, H.P. et al. 1993. *Research Report Community development banking: A proposal to establish a nationwide system of community development banks*, Public policy Brief The Levy Economics Institute of Bard College, No. 3 (<http://hdl.handle.net/10419/54331>)
- Mishkin F.S. (ed.), 2002, *Prudential Supervision. What works and what doesn't*, The University of Chicago Press, Chicago (MI)
- Moosa I.A. 2010. *The Myth of Too Big to Fail*, Palgrave MacMillan, London (UK)
- OECD 2014. *Does income inequality hurt economic growth?* <http://www.oecd.org/els/soc/Focus-Inequality-and-Growth-2014.pdf>
- Onado M. 2012., *Economia e regolamentazione del sistema finanziario*, Il Mulino, Bologna
- Ötker-Robe I. et al. 2010. *Impact of Regulatory Reforms on Large and Complex Financial Institutions*, Staff Position Paper, IMF n. 16 (<http://www.imf.org/external/pubs/ft/spn/2010/spn1016.pdf>)
- Ötker-Robe I. et al. 2011. *The Too-Important-to-Fail Conundrum: Impossible to Ignore and Difficult to Resolve*, Staff Paper, IMF n. 12 (<http://www.imf.org/external/pubs/ft/sdn/2011/sdn1112.pdf>)
- Palley T.I., 2007. *Financialization: What It Is and Why It Matters*, The Levy Economics Institute of Bard College WP 525, Annandale-on-Hudson (NY) ([http://www.levyinstitute.org/pubs/wp\\_525.pdf](http://www.levyinstitute.org/pubs/wp_525.pdf))
- Panico C., Pinto A., Puchet Anyul M. 2012. *Income distribution and the size of the financial sector: a Sraffian analysis*, "Cambridge Journal of Economics", Vol. 36 (6)
- Panitch L. 2009. *Rebuilding banking* (<http://www.redpepper.org.uk/Rebuilding-Banking>)
- Pare T. P., "Today's hot concept, tomorrow's forest fire", *Fortune*, May 15, 1995
- Parker R.E. (eds) 2007. *The Economics of the Great Depression*, Elgar, Northampton (US)
- Passarella M. 2012. "A simplified stock-flow consistent dynamic model of the systemic financial fragility in the 'New Capitalism'", *Journal of Economic Behavior & Organization*, Volume 83, Issue 3, August
- Persaud A.D. 2008. *Sending the Herd over the Cliff*, "Finance & Development", June (<http://www.bis.org/publ/bppdf/bispap02l.pdf>)
- Philippon T., 2008. *The Evolution of the US Financial Industry from 1860 to 2007: Theory and*

- Evidence, Stanford University, mimeo ([http://economics.stanford.edu/files/Philippon5\\_20.pdf](http://economics.stanford.edu/files/Philippon5_20.pdf))
- Polouček S. 2014. *Lender of last resort and too-big-to-fail hypothesis*, VŠB-Technical University of Ostrava Faculty of Economics, Department of Economics, mimeo ([http://icfb.rs.opf.slu.cz/sites/icfb.rs.opf.slu.cz/files/37\\_poloucek.pdf](http://icfb.rs.opf.slu.cz/sites/icfb.rs.opf.slu.cz/files/37_poloucek.pdf))
- Powell J.H., *Ending “too big to fail”*, Speech at the Institute of International Bankers 2013 Washington Conference, Washington, DC, 4 March 2013 (<http://www.bis.org/review/r130305b.pdf>)
- Pozen R., 2010. *Too Big to Save? How to fix the U.S. Financial System*, John Wiley, Hoboken, (NJ)
- Radde S. 2012. *Liquidity Crises, Banking, and the Great Recession*, German Economic Association, Annual Conference ([http://econstor.eu/bitstream/10419/65408/1/VfS\\_2012\\_pid\\_528.pdf](http://econstor.eu/bitstream/10419/65408/1/VfS_2012_pid_528.pdf))
- Rajan R.G. 2005. *Has Financial Development made the World Riskier?*, NBER WP 11728, (<http://www.nber.org/papers/w11728>)
- Rajan R.G. 2010. *Fault Lines, How Hidden Fractures Still Threaten the World Economy*, Princeton University Press, Princeton (NJ)
- Repullo R., Suarez J. 2008, *The Pro-cyclical Effects of Basel II*, Paper presented at the 9th Jacques Polak Annual Research Conference Hosted by the IMF, Washington, DC, November 13-14, 2008 (<https://www.imf.org/external/np/res/seminars/2008/arc/pdf/rs.pdf>)
- Rosenblum H. 2011. *Choosing the Road to Prosperity Why We Must End Too Big to Fail—Now*, Federal Reserve Bank of Dallas, (<http://www.dallasfed.org/assets/documents/fed/annual/2011/ar11.pdf>)
- Roubini N., Mihm S. 2010. *Crisis Economics*. Allen Lane, London (UK)
- Ryoo S., 2013. *Bank profitability, leverage and financial instability*, “Cambridge Journal of Economics”, Vol. 37 Issue 5
- Scherer F. M. 2010. *A perplexed economist confronts ‘too big to fail’*, *The European Journal of Comparative Economics* 7:2
- Siegert C. Willison M. 2015, *Estimating the extent of the ‘too big to fail’ problem — a review of existing approaches*, BoE Financial Stability Paper n. 32, ([http://www.bankofengland.co.uk/financialstability/Documents/fpc/fspapers/fs\\_paper32.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/fspapers/fs_paper32.pdf))
- Shiller R. 2009. *Rational Exuberance*, Princeton University Press, Princeton (NJ)
- Shull B. 2010. *Too Big to Fail in Financial Crisis: Motives, Countermeasures, and Prospects*, The Levy Economics Institute WP 601 Annandale-on-Hudson (NY) ([http://www.levyinstitute.org/pubs/wp\\_601.pdf](http://www.levyinstitute.org/pubs/wp_601.pdf))
- Singh A. 2012. *Too Big to Fail Bank: Examining the How of Breaking Up*, Harvard University, mimeo, (<http://www.law.harvard.edu/programs/about/pifs/education/llm/2012---2013/aditi-singh-final-paper.pdf>)
- Skott P. 2012, *Pluralism, the Lucas critique, and the integration of macro and micro*, University of Massachusetts Amherst, WP 2012-04 (<http://www.umass.edu/economics/publications/2012-04.pdf>)
- Smith A. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*, Harriman House Ltd. Petersfield (UK), 2007 edition
- Sorkin A.R. 2009. *Too Big to Fail. Inside the Battle to save Wall Street*, Allen Lane, London
- Stephens P. 2011. “Vickers hands victory to the bankers’ shop steward”, *Financial Times* (13<sup>th</sup> September 2011)
- Stiglitz J. et al., 2009, *Too big to fail or too big to save?: examining the systemic threats of large financial institutions*, Hearing before the Joint Economic Committee Congress of the United States of America of the One Hundred Eleventh Congress, First Session, 21<sup>st</sup> April (<http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52189/pdf/CHRG-111shrg52189.pdf>)
- Stiglitz J.E. 2010. *Freefall*, Norton, New York (NY)
- Stiroh K.J., Strahan P.E. 2003., *Competitive Dynamics of Deregulation: Evidence from U.S.*

- Banking, "Journal of Money, Credit & Banking", vol. 35
- Strange S. 1996. *Mad Money: when markets outgrow governments*, The University of Michigan Press, Ann Arbor (MI)
- Tarashev N., Borio C., Tsatsaronis K. 2010. *Attributing systemic risk to individual institutions*, BIS WP 308 (<http://www.bis.org/publ/work308.pdf>)
- Taylor A. Goodhart G. 2004. *Procyclicality and volatility in the financial system: The implementation of Basel II and IAS 39*, ([http://www.hkimr.org/uploads/conference\\_detail/803/con\\_paper\\_0\\_135\\_charles-goodhart.pdf](http://www.hkimr.org/uploads/conference_detail/803/con_paper_0_135_charles-goodhart.pdf))
- Temin P. 1989, *Lessons from the Great Depression*, MIT Press, Cambridge (US)
- Thakor A.V., 2010. *Financial crises and the challenges for future research*, "Bancaria", n. 3
- Tonveronachi M., 2009. *Distorsioni strutturali della regolamentazione prudenziale delle banche*, "Moneta e Credito", vol. 62
- Toporowski J. 2000. *The end of finance: The theory of capital market inflation, financial derivatives and pension fund capitalism*, Routledge, London (UK)
- Toporowski J. 2010. *Why the World Economy Needs a Financial Crash and Other Critical Essays on Finance and Financial Economics*, Anthem Press, London (UK)
- Travaglini G. 2009. *Le diseguaglianze alla radice del crack*, (<http://www.sbilanciamoci.info/content/pdf/1677>)
- Triana P. 2009. *Lecturing Birds on Flying. Can Mathematical Theories Destroy the Financial Markets?*, Wiley Hoboken (NJ)
- Tufano, P. 2002. *Financial Innovation*, Harvard Business School, mimeo
- Turner A. 2012. *Economics After the Crisis. Objectives and Means*, The MIT Press, Cambridge (MA)
- Turner A. et al. 2010. *The future of finance and the theory that underpins it*, London School of Economics and Political Science, London
- Van Roy P. 2008. *Capital Requirements and Bank Behavior in the Early 1990s: Cross-Country Evidence*, "International Journal of Central Banking", Vol. 4 N. 3
- van Treeck T. 2013. *Did Inequality Cause the U.S. Financial Crisis?*, IMK WP 91-2012 ([http://www.boeckler.de/pdf/p\\_imk\\_wp\\_91\\_2012.pdf](http://www.boeckler.de/pdf/p_imk_wp_91_2012.pdf))
- Vaoufakis I. 2013. *Global Banks as exporters of Permanent Credit Crunches to Peripheral Economies: The case of Mexico*, (<http://yanisvaroufakis.eu/2013/09/05/global-banks-as-exporters-of-permanent-credit-crunches-to-peripheral-economies-the-case-of-mexico/>)
- VV. AA. 2007. *Summary of presentation by Prof. Massoud Amin and related comments. New Directions for Understanding Systemic Risk, Federal Reserve Bank of New York and the National Academy of Science*
- Wagner W. 2010. *In the Quest of Systemic Externalities: A Review of the Literature*, CESifo Economic Studies, 56:1
- Wheelock, D.C., Wilson P.W. 2012. *Do large banks have lower costs? New estimates of returns to scale for US banks*, "Journal of Money, Credit and Banking", Vol. 44, No. 1
- Wilkinson R., Pickett K. 2009, *The Spirit Level*, Bloomsbury Press, New York (NY)
- Wray R.L., 2011a. *Lessons We Should Have Learned from the Global Financial Crisis but Didn't*, The Levy Economics Institute of Bard College WP 681, Annandale-on-Hudson (NY) ([http://www.levyinstitute.org/pubs/wp\\_681.pdf](http://www.levyinstitute.org/pubs/wp_681.pdf))
- Wray R.L. 2011b. *A Minskyan Road to Financial Reform*, The Levy Economics Institute of Bard College WP 655, Annandale-on-Hudson (NY) (<http://www.levyinstitute.org/publications/a-minskyan-road-to-financial-reform>)
- Wray R.L. 2011c. *Minsky's Money Manager Capitalism and the Global Financial Crisis*, The Levy Economics Institute of Bard College WP 661, Annandale-on-Hudson (NY) ([http://www.levyinstitute.org/pubs/wp\\_661.pdf](http://www.levyinstitute.org/pubs/wp_661.pdf))
- Yellen J.L. 1996. *Remarks at the Conference on Recent Developments in the Financial System*, Jerome Levy Economics Institute of Bard College





## Appendix – from how many to how many?

Our proposal is aimed at eliminating the tbtF banks issue for ever. We can ask how much the compulsory break up would affect present SIFIs, that is how many over the threshold banks exist right now and how many would exist after the application of the world cap. According to *Global Finance*, at the end of 2013 the biggest 50 banks in the world had combined total assets of \$ 69,557,024 billion<sup>18</sup>, roughly 90% of the world GDP. Applying a cap at 300 billion, they would become more than 230 banks, a radical reduction in concentration. In the same year, in EU there were 26 banks with more than € 300 billion total assets and around 22,500 billion total assets. After the split they would become 70. In the US they would pass from 7 to 25<sup>19</sup>.

In percentage terms the increase would be around 460% on a world scale, 270% in Europe and 360% in the US. If we consider the tbtF banks as a separate market and calculate the HH index for them, we find that for EU, the HHI would be reduced from around 500 to 143, in the US from almost 2000 to 400. Again, the scale of de-concentration would be without precedent. This would mean reducing the Sisyphus rock in very small pieces.

---

<sup>18</sup> Data source: <https://www.gfmag.com/magazine/october-2013-1/worlds-biggest-banks-2013>.

<sup>19</sup> Data source: for EU: <http://europe.deposits.org/biggest-banks.html>; for US <http://www.federalreserve.gov/Releases/Lbr/current/default.htm>.