

An industrial organisation approach to the too-big-to-fail problem

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This article suggests a reform of the organisation of money markets that would largely eliminate the risk of contagion. The notion of “systemically important institution” would be replaced by that of systemically important platform”. Such platforms would only be directly accessible to a group of “officially recognised financial institutions” that would have to comply with special regulatory requirements and would be directly supervised by the central bank. The status of “officially recognised financial institution” could be revoked by the central bank if these special regulatory requirements are not satisfied. A special resolution procedure would be created for these institutions, so that the central bank has the legal powers to close it down, or at least restrict its activities before it is too late. OTC markets would still be active but, since they would be penalised by regulation, it is likely that they would become small, and therefore not in a position to jeopardise the entire system.

NB: This paper is closely inspired of a text with the same title that was prepared for the Federal Reserve Bank of Boston 54th Economic Conference, October 21-23, 2009, and my article “Regulating systemic institutions” published in the Finnish Economic Papers (2009), 22(2).

This article puts forward a simple reform that could lead to the elimination – once and for all – of the too-big-to-fail (TBTF) problem, which is the most frightening issue currently on the regulatory agenda. Indeed, the main lesson that can be drawn from the actions taken (and statements made) by public authorities during this crisis is that, in the future, *any large financial institution that encounters financial problems can expect to be bailed out by public authorities on the grounds that it is TBTF* (alternative terms are too-interconnected-to-fail,¹ Large and Complex Banking Organisation – LCBO or Systematically Important Financial Institution – SIFF). The turmoil that followed the failure of Lehman Brothers in September 2008 has indeed led politicians to believe they had to commit to an unconditional support of any troubled financial institution whose failure might create major disruptions. Of course this commitment is a disaster in terms of moral hazard and market discipline. From a forward looking perspective, public authorities could not convey a worse message to market participants and bank managers.

A similar pattern emerged after the Continental Illinois bail-out in 1984,² and at the time, it took more than five years for market discipline to be somewhat restored.³ But this bail-out was a single event, and the Comptroller of the Currency of the time tried to maintain, as much as he could, some ambiguity on which banks were really TBTF.⁴ This time all ambiguity has been resolved in a dramatic way: all large financial institutions will always be rescued. Public authorities of G20 countries have even agreed to publicly commit to a systematical bail-out. Unless resolute reforms are undertaken, it will probably take a very long time to restore market discipline again. Moreover an indirect outcome of the crisis was an increased concentration of the banking systems of many countries, the surviving banks becoming even bigger than before and in some countries at least, close to be too-big-to-be-bailed-out.

In a premonitory book, Stern and Feldman (2004) rightly identified TBTF as a major regulatory issue and proposed a whole range of policy measures in order to fix it. The reform proposed here is complementary to their policy recommendations, but I view it as a priority. It is in some way radical, but fits very well into the general movement toward relying more on central counterparty clearing for interbank trading and derivatives markets.

Another major source of concern for public authorities is the complete lack of resiliency of interbank and money markets during the recent crisis. It is amazing how some shocks to the relatively small subprime market could lead to the complete dry-up of liquidity markets for more than a year. This paper argues that this lack of resiliency is due to a fundamental mistake in the way these markets were conceived. To a large extent, the contagion that took place on these markets was the necessary outcome of the passive attitude of banking supervisors, who have let large banks develop an enormous and opaque nexus of bilateral obligations. In Rochet and Tirole (1996), Jean Tirole and I explored the theoretical justifications of such a decentralised organisation of the interbank markets and found only one possible answer: market discipline. More precisely we found that the only possible explanation why prudential authorities have let banks organise the trade of their reserves vis-à-vis the central bank in an over-the-counter (OTC) fashion was the desire to promote what we called *peer monitoring* i.e. the mutual surveillance of banks by their competitors. However the price to pay for this mutual surveillance is the risk of contagion. Market discipline only works if public authorities can convince market participants that they will not intervene if a systemic crisis occurs, which is obviously not credible.

A logical consequence of this result, which we did not defend forcefully enough in Rochet and Tirole (1996), is that the current, decentralised, organisation of interbank markets has a huge cost (contagion risk)

¹ Perhaps a more appropriate wording is too-politically-connected-to-fail.

² In May of 1984, Continental Illinois was bailed out by the US Federal Government. It was only the 7th largest bank in the United States, but it was a money center bank holding large deposits of hundreds of smaller banks. US supervisors feared that its failure could propagate toward many of these smaller banks. The Comptroller of the Currency engineered a rescue that bailed out not only bank depositors but also uninsured creditors of the bank holding company. When called to testify by the Congress, the Comptroller admitted that other large banks might warrant similar support. Congressman McKinney uttered the now famous phrase: "Mr. Chairman, We have a new kind of bank. It is called too-big-to-fail, TBTF, and it is a wonderful bank." (Hearings before the Subcommittee on Financial Institutions, 1994, cited by Morgan and Stiroh, 2005).

³ Flannery and Sorescu (1996) show that banks' debt spreads only started reflecting default risks around 1989, after a regulatory transition toward letting market participants share the losses when a banking firm fails.

⁴ See Morgan and Stiroh (2005).

but no benefit. Market discipline does not work for the interbank market, not only because of the strong likelihood of a public bail-out in case of a crisis but also because of the faulty conception of its industrial organisation. Decentralised trading of bank reserves has a major drawback: it bundles liquidity risk with counterparty risk, which makes price discovery almost impossible.

The plan of the rest of this article is the following. Section 1 puts forward the view that public authorities should protect markets not banks. Section 2 presents, in a non technical way, the theoretical analysis of the choice between centralised trading and systemic risk.

1 | PROTECTING PLATFORMS, NOT BANKS

The main objective of macro-prudential regulation should be to protect platforms (i.e. vital parts of financial infrastructure) not individual banks! Many central banks are given the rather vague objective of "maintaining financial stability", which gives them too much discretion and opens the door to lobbying by large institutions and political pressure. This could be limited if central banks were given a more precise mandate. The one I propose here is to *guarantee the integrity of a precise list of financial markets and infrastructures that are deemed "vital"*: interbank (both secured and repo) markets, money markets, as well as some derivative markets and large value payment systems. To do so, it would be useful to learn from the experience of private clearing houses, which have developed sophisticated policies for protecting themselves against the failure of their participants.

Many commentators have argued that the lack of transparency of interbank exposures on money markets and derivatives have played a major role in the propagation of the crisis. OTC transactions are typically very opaque and can be a major source of systemic risk. Secretary Geithner has fostered the development of central clearing platforms for credit derivatives. Along the same lines, a recent paper by Pennachi (2009) discusses deposit insurance-related reforms that would improve the efficiency

of the financial system. The first reform he identifies is "to mitigate TBTF by reducing counterparty risk via centralised clearing (and possibly exchange-trading) of derivatives. See also Bernanke (2009): "To help alleviate counterparty credit concerns, regulators are also encouraging the development of well-regulated and prudently managed central clearing counterparties for OTC trades. Just last week, we approved the application for membership in the Federal Reserve System of ICE Trust, a trust company that proposes to operate as a central counterparty and clearinghouse for CDS transactions."

Bernanke (2009) puts forward a similar proposal for repo markets: "Enhancing the resilience of the tri-party repurchase agreement (repo) market, in which the primary dealers and other major banks and broker-dealers obtain very large amounts of secured financing from money market mutual funds and other short-term, risk-averse sources of funding. For some time, market participants have been working to develop a contingency plan for handling a loss of confidence in either of the two clearing banks that facilitate the settlement of tri-party repos. Recent experience demonstrates the need for additional measures to enhance the resilience of these markets, particularly as large borrowers have experienced acute stress. The Federal Reserve's Primary Dealer Credit Facility, launched in the wake of the Bear Stearns collapse and expanded in the aftermath of the Lehman Brothers bankruptcy, has stabilised this critical market, and market confidence has been maintained. However, this program was adopted under our emergency powers to address unusual and exigent circumstances. Therefore, more-permanent reforms are needed. For example, it may be worthwhile considering the costs and benefits of a central clearing system for this market, given the magnitude of exposures generated and the vital importance of the market to both dealers and investors."

My proposal would go further by extending the centralised model not only to derivatives and repo markets but also to unsecured interbank markets: I believe that more centralisation could be an efficient way to stabilise interbank markets: for example, banks would be offered the choice between a centralised market for liquidity, which would be insured and supervised by the Central Bank, and OTC transactions that would remain risky and,

as such, associated with regulatory capital charges. As for money markets, it should be possible to move also toward more centralisation. As Bernanke puts it (2009): "In light of the importance of money market mutual funds – and, in particular, the crucial role they play in the commercial paper market, a key source of funding for many businesses – policymakers should consider how to increase the resiliency of those funds that are susceptible to run. One approach would be to impose tighter restrictions on the instruments in which money market mutual funds can invest, potentially requiring shorter maturities and increased liquidity. A second approach would be to develop a limited system of insurance for money market mutual funds that seek to maintain a stable net asset value."

In its study on the safety and efficiency of derivatives markets, the Commission of the European Communities (2009) states that "CCP clearing is the most effective way of reducing credit risk and is broadly feasible in all market segments" and rightly points that "the near collapse of Bear Sterns in March 2008, the default of Lehman Brothers on September 15, 2008, and the bail-out of AIG on the next day highlighted the fact that OTC derivatives in general and credit derivatives in particular carry systemic implications for financial markets. The three institutions mentioned above were important players in the OTC derivatives market, either as dealers or users of OTC derivatives or both."

The guiding principle of central counterparty (CCP) clearing is that after two parties have agreed on a trade, the clearing platform steps into each trade by acting as counterparty to each side. This is called novation, a mechanism by which the platform essentially becomes "the buyer to every seller and the seller to every buyer". This mechanism allows the netting of multilateral (not only bilateral) exposures but also the centralisation of collateral, which introduces diversification effects, especially if there is some degree of cross-pledging between different types of markets.

To reduce the risk and possible consequences of a default by a clearing member or one of its customers, CCPs have developed several risk management procedures. The primary protection is provided by *initial margin*, a deposit which clearing members are required to place in an account with the CCP.

CCPs typically also make margin calls to ensure that they remain protected over time as prices change. They usually also have access to additional default resources, such as mutual guarantee funds or insurance cover, and require clearing members to fulfill financial requirements to reduce the likelihood of default.

To protect themselves and the clearing house against client defaults, members are generally required to set a minimum level of margin for their clients according to rules set down by the clearing house. De facto, CCP failures have been extremely rare. Knott and Mills (2002) find only three cases: Paris in 1973, Kuala Lumpur in 1983, and Hong Kong in 1987.

In principle, CCPs mark-to-market positions are daily. Thus they should be exposed only to the extent that a one-day price movement exhausts the entire margin of a clearing member. In practice, CCPs may be exposed over a longer period as it may take time to decide whether a member should be declared in default, and then to close-out positions. Several studies have attempted to quantify the potential exposure of clearing houses over one or more days. Some of these models are purely statistical, and pre-specify acceptable coverage levels in a purely exogenous fashion. By contrast, Fenn and Kupiec (1993) develop a model that aims at minimising the total sum of margin, settlement costs and the cost of settlement failure. Clearing houses need to trade-off several objectives when they set their margins. Requiring high margins and good quality collateral is costly to members. Marking positions to market and settling gains or losses, on either a daily or more frequent basis, also entails costs. To arrive at an optimal margin level the clearing house must balance these costs against the potential losses resulting from a default of contracts.

By helping to manage counterparty risk and by providing netting services, CCPs allows market participants to economise on collateral, compared to what they would otherwise need to hold to ensure equivalent protection in bilaterally cleared markets. Regulators also often recognise the reduction in counterparty risk by allowing clearing members to hold less capital than if they were exposed directly to other market participants. Clearing members may also reduce the resources spent on monitoring individual counterparties, insofar as their actual

counterparty is the CCP. *Through the design of clearing members margining and collateral requirements, CCPs reduce the probability of immediate propagation to solvent members of losses incurred by the insolvent one.*

Moreover a CCP clearly improves transparency, which explains why reforms are often resisted by those currently enjoying an information advantage (i.e. major OTC derivatives dealers). As exemplified by the Lehman failure, when a major player in bilaterally cleared derivatives markets fails, it is not immediately apparent to the remaining market participants who are absorbing the losses, how big they are and how the failed firm's counterparties are affected. The effects of this uncertainty can be devastating on market confidence, as illustrated by Bear Sterns, Lehman and AIG. This uncertainty is mitigated by a CCP that has effective means of allocating losses and no incentive to use the information it holds for its own profits. This neutrality alleviates the information concerns of market participants. A CCP also increases operational efficiency, by centralising the monitoring of trades and reducing potential for disputes.

CCPs have proven to be resilient even under stressed market conditions as the one we are facing today and showed their ability to ensure normal market functioning in case of failure of a major market player. A case in point is the successful unwinding of the interest rate swap positions left open following the default of Lehman Brothers. This was engineered by LCH.Clearnet, who operates SwapClear, currently the dominant provider of CCP clearing services for interest rate swaps. Lehman's USD 10 trillion portfolio of 66,000 trades across five currencies was replaced and less than 50% of Lehman Brother's initial margins was required to hedge the risk, manage and auction the position.

Typically, private clearing houses distinguish between their members, who have a privileged status, and ordinary participants. In counterpart to their privileged status, the clearing members are supposed to implement a set of risk mitigation policies, such as collateral and capital requirements and bilateral credit limits. For example members are typically required to make an upfront deposit to a default fund supposed to cover losses that exceed the defaulting member's margins. I believe central banks could adopt a similar policy, and

condition the direct participation of financial institutions to the "vital" part of the financial infrastructure on special requirements (such as solvency and liquidity requirements) that would go beyond the standard requirements imposed on deposit taking institutions by micro-prudential regulators.

In effect, my proposal would aim at replacing the notion of "systemically important institution" by that of "systemically important platform." Such platforms would only be directly accessible to a group of "officially recognised financial institutions" that would have to comply with special regulatory requirements and would be directly supervised by the central bank. The status of "officially recognised financial institution" could be revoked by the central bank if these special regulatory requirements are not satisfied. A special resolution procedure would be created for these institutions, so that the central bank has the legal powers to close it down, or at least restrict its activities before it is too late. Again this is in line with the position recently expressed by Chairman Bernanke (2009): "The United States also needs improved tools to allow the orderly resolution of a systemically important nonbank financial firm, including a mechanism to cover the costs of the resolution. In most cases, federal bankruptcy laws provide an appropriate framework for the resolution of nonbank financial institutions. However, this framework does not sufficiently protect the public's strong interest in ensuring the orderly resolution of non-depository financial institutions when a failure would pose substantial systemic risks. Improved resolution procedures for these firms would help reduce the too-big-to-fail problem by narrowing the range of circumstances that might be expected to prompt government intervention to keep the firm operating."

These "officially recognised financial institutions" would be the equivalent of existing "systemically important institutions", who have access to special liquidity assistance facilities and possible government guarantees in case of distress. But there would be an important difference: it is the central bank that would choose who belongs to the club and who does not! If the advantages associated with membership far exceeded the costs, the threat of revoking the status would work as an important disciplining device. OTC markets would still be

active but, since they would be penalised by regulation, it is likely that they would become small, and therefore not in a position to jeopardise the entire system.

2 | INTERBANK LENDING AND SYSTEMIC RISK

In an article published in 1996, Jean Tirole and I analysed the trade-offs involved in the management of systemic risk on interbank markets. This section summarises, in a non-technical fashion, the main conclusions of our analysis, which already contained the main elements of what I call today the "Industrial organisation approach" to the TBTF problem.

A first, important, remark is that systemic risk is a concern only in a decentralised environment in which banks incur credit risk in their mutual transactions. Like in many crises of the past, governments have tried to resolve the current crisis (*ex post*) by insuring most of interbank claims, rescuing distressed banks through discount loans, the facilitation of purchase-and-assumptions, nationalisations, and so forth. However, such policies do not provide proper (*ex ante*) incentives for interbank monitoring and may lead to substantial cross-subsidies from healthy banks to frail ones through a government-mediated mechanism. An alternative method of prevention of systemic risk would consist in centralising banks' liquidity management. The Fed funds market could be organised as an anonymous double auction (to which the central bank could participate to manage global liquidity), in which each bank would trade with the central bank rather than with other banks. The central bank would then have better control over interbank positions and would further prevent systemic risk on the interbank market. Last, bank transactions on derivative markets could be protected through sufficient collateral so that, again, banks would not grant each other credit. Whether the government is affected by a bank failure in a centralised system depends on the constraints it puts on banks, but, in any case, centralisation, like insurance, eliminates systemic risk.

The current system of interbank linkages suffers from its hybrid nature. On one hand, banks engage in largely decentralised mutual lending. On the other hand, government intervention, voluntary or involuntary, destroys the very benefit of a decentralised system, namely, peer monitoring among banks. If one does not believe that the social value of the fine information that banks have or may acquire about each other exceeds the cost of systemic risk, then there is no particular reason to encourage decentralised interactions among banks. To stress the point that a decentralised operation of interbank lending must be motivated by peer monitoring, consider the following (alternative) plausible explanation of interbank lending. Some banks, perhaps due to their regional implantation, are good at collecting deposits, but have poor investment opportunities. In contrast, some other banks, such as the money center banks, have plenty of such opportunities or else are sufficiently large to afford the large fixed costs associated with complex derivative and other high-tech financial markets. It then seems natural for the former banks to lend to the latter. Yet, that a deposit-collecting bank should incur a loss when the borrowing bank defaults, as is implied by interbank lending, is not a foregone conclusion. If the relationship between the two banks involves a transfer of funds but no monitoring, the operation described above could be implemented in a more centralised, and probably better for prudential control, way. Namely, the deposit-collecting bank could pass the deposits on to the borrowing bank, while continuing to service them (in the same way a bank may continue to service mortgage loans it has securitised without recourse to other banks). The key difference with the interbank-loan institution is that the deposits made at the originating bank would, except to the eyes of the depositors, become deposits of the receiving bank. So, if the latter defaulted, losses would be borne by the deposit insurance fund, and not by the originating bank. We conclude that a mere specialisation of banks into deposit-taking banks and actively investing banks by itself does not lead to the existence of decentralised interbank lending.

One of the key messages conveyed by Rochet and Tirole (1996) is that the flexibility afforded by

decentralised interbank transactions can only be justified by banking regulators' desire to promote effective peer monitoring by banks. However the current crisis has shown that the cost of encouraging this peer monitoring, namely allowing the possibility of a systemic crisis was far bigger than the potential benefit of this peer monitoring, especially given the

impossibility for public authorities not to bailout large insolvent institutions. Therefore centralising the payment system, the Fed funds market, and other markets in which banks currently have bilateral exposures would result in an equally efficient allocation of liquidity among banks and would facilitate prudential control.

Confronted with an unprecedented freezing of interbank and monetary markets after September 2008, central banks have reacted by assuming a large part of the intermediation of liquidity flows among banks, and de facto becoming the clearing houses for the unsecured and for the collateralised interbank markets. A natural question is when this "temporary" situation will cease and when interbank markets will "go back to normal".

Similarly, governments have felt obliged to set up extremely wide bailout packages including public recapitalisations, purchase of toxic assets, and subsidised lending to distressed institutions. When is this "exceptional" situation supposed to terminate and what policies are supposed to be implemented, in the future, for dealing with TBTF institutions?

The response to these questions that is put forward in this paper may seem radical, but it is reasonably simple. The main idea is to reverse the balance of power between large banks and supervisors. Instead of letting some banks grow big and opaque enough to constitute a threat to the financial system, my proposal is to let the central bank, as the systemic risk supervisor, decide which banks are safe enough to be allowed as members of the financial "platforms" that are deemed vital for the economy: large value payment systems, unsecured and collateralised interbank markets and some derivative markets. The central bank would receive an explicit mandate for guaranteeing the continuity of these platforms and for regulating membership.

If the advantages associated with membership to these platforms far exceeded the costs, the threat of revoking the member status would work as an important disciplining device. OTC markets would still be active but, since they would be penalised by regulation, it is likely that they would become small, and therefore not in a position to jeopardise the entire system.

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