

Correlation networks to measure the systemic implications of banks resolution

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Abstract

We propose a market-based, early warning measure of credit risk able to enhance the observed CDS spreads with a risk premium that derives from contagion by means of a correlation network model. We then combine the proposed measure with balance-sheet information and liabilities composition, in order to investigate the systemic contagion that arises from the resolution of a failing financial institution within the context of the European single resolution framework. To this aim we consider three alternative scenarios: liquidation, private recapitalisation or a bail-in resolution action. The application of our methodology reveals that, from the system's viewpoint, a private intervention and a bail-in resolution minimise losses with respect to the liquidation alternative. In addition, the bail-in resolution slightly reduces contagion effects with respect to a private intervention. Our empirical findings show that the proposed measure is quite effective to help the decision making process, from both an individual bank's perspective and an overall regulatory viewpoint.

The systemic effect of banks resolution

Financial institutions are among the most relevant contributors to systemic risk. For this reason, after the recent financial crisis, policies aimed at monitoring and supervising systemic risk have been developed in several countries, within newly established macro-prudential frameworks. The introduction of new regulatory frameworks in the light of a coordination between micro- and macro-prudential tools is the result of one of the main lessons learnt from the great recession: it is now clear, in fact, that micro-prudential supervision alone, with its predominant focus on individual banks, can not easily detect incipient systemic risks, because they derive from interconnections with other banks and with the economy. In addition, while the goals of macro- and micro-prudential policy are clearly distinct, their instruments tend to coincide, in the sense that instruments commonly regarded as macro-prudential can, in principle, be used also by the micro-prudential supervisor as part of its supervisory evaluation and intervention process. Consistently with this framework, the Euro area has introduced the SSM as a single independent supervisor, distinct but closely connected to the European Central Bank, having all the supervisory instruments. A different body, the European Systemic Risk Board

(ESRB), provides macro-prudential policy analyses and recommendations.

The specific focus on the Euro area is particularly interesting also because essential policy developments have been recently introduced: in particular, the 2014/59/EU directive, known as the Bank Recovery and Resolution Directive (BRRD), and the Single Resolution Mechanism (SRM), which has become fully operational, for all the 19 Euro area countries, on 1 January 2016. In particular, while the BRRD determines the rules for how EU banks in a crisis situation are restructured and how losses and costs are allocated among banks' shareholders and creditors, the SRM is directly responsible for the resolution of all banks in Member States participating in the banking union.

Before the BRRD and the SRM, when a bank was deemed failing or likely to fail, supervisory authorities could essentially choose between liquidation, with high costs for all involved stakeholders (shareholders, bondholders, depositors, borrowers) and a public bail-out, with high costs for taxpayers and further negative macroeconomic consequences (see e.g. Halaj et al., 2016) that include moral hazard problems for too-big-to-fail financial institutions, and a vicious loop between bank risk and sovereign risk.

Among its objectives, the BRRD also proposes an alternative solution for covering losses that, while avoiding the use of public funds, imposes on private creditors an ordered reconstruction of the bank, avoiding the extreme consequences that would occur in case of liquidation. In this sense, the BRRD contains a bail-in tool that enables the resolution authority to satisfy claims according to a waterfall hierarchy in the liabilities, in which junior liabilities are bailed-in first, followed by the more senior ones.

The bail-in tool can be used within the resolution mechanism of a bank. However, according to the Article 32 of the BRRD, a resolution action can be taken only if some preliminary conditions are met: a) the bank has been assessed as failing or likely to fail; b) no alternative private interventions, nor supervisory interventions, would prevent such failure; c) a resolution action is necessary in the public interest. In other words, in the Euro area a bail-in could be pursued when a bank is assessed as failing or likely to fail, a resolution action is necessary in the public interest (the bank cannot be liquidated) and no other alternatives can be successfully implemented (such as private intervention and public bail-out). Thus, to proceed with a bail-in, a supervisory authority should compare its consequences with other possible interventions, such as liquidation, private intervention and public bail-out.

Liquidation, Bail-in or private intervention

The aim of the paper by Giudici and Parisi (2017) is to understand the systemic implications of the bail-in tool,

comparing them with two other possible alternatives, namely liquidation and private intervention.

More precisely, the paper starts examining the joint evolution of the Corporate Default Swap (CDS) spreads of a set of financial institutions. The use of CDS spread data allows the development of a partial correlation network model that can explicitly measure the propagation of the default probabilities of banks within the financial system. The measure can thus be employed, within the context of the Single Resolution framework, to evaluate the potential losses of banks in case of a distress event under the three possible actions (liquidation, private intervention, bail-in) mentioned above. In the methodological setting, the choice of one action with respect to the others is driven by the minimisation of the potential losses for each single bank (that can thus independently decide whether to participate to a private intervention or not), and for the entire banking system as well.

More in detail, the proposed methodology can be employed in a distress scenario, meaning a banking system where one or more financial institutions are failing or likely to fail. In this context, the authors compare three different possible actions: a) the “troubled” institution has not enough regulatory capital and bail-inable liabilities to absorb losses and/or to meet regulatory requirements (Pillar 1, Pillar 2, leverage ratio and regulatory buffers). In addition, it is not deemed systemic, and is thus put into liquidation; b) the “troubled” institution is helped by a private intervention, that is exemplified by means of a capital injection deriving from the other banks in the system; c) the “troubled” institution has not enough regulatory capital in order to absorb losses still meeting regulatory requirements (i.e. Additional Tier 1 and Tier 2 conversion is not sufficient), but it has enough bail-inable liabilities and is considered as systemically important, so it undergoes a bail-in resolution process.

Under scenario (a) the troubled bank defaults and affects its neighbours through a shock in their expected losses, as a consequence of contagion effects. However, after a while, the bank system will reach a new equilibrium, without the defaulted bank and, thus, affected by less contagion risk. Under scenario (b) the troubled bank does not default and, consequently, does not affect the others through an immediate shock in their default probabilities. However, it continues being part of the banking system, so that all the other banks in the network will still be affected by the contagion risk coming from the persistence of a highly risky bank. In addition, all the banks that decide to participate to the private intervention become exposed to such bank, thus increasing their potential losses. Finally, under scenario © the troubled bank keeps being part of the system and continues to affect the others as under scenario (b); in addition, burden sharing losses are imposed to banks as creditors of the troubled bank.

The design of these three scenarios allows the identification of the “best” action in terms of a losses minimisation problem, by considering the banks’ and the system’s perspective. In the former situation, each bank is allowed to derive its own losses distribution under the three alternatives and, consequently, can decide whether to take part to the private intervention or not. In the latter case, the resolution authority is allowed to derive the potential losses for the entire banking system under the three alternatives and, consequently, can decide whether the

resolution tool has to be preferred in terms of losses minimisation, or whether it should be considered as the last option.

The system’s perspective introduced in this study is also crucial for another important policy implication: the measurement tool, in fact, could be employed to evaluate whether a failing bank, for which no private intervention is possible, is systemically relevant and, therefore, maintained in the system conditional on a bail-in resolution or, instead, deemed as not relevant and, therefore, liquidated.

Application - the Italian banking system

The Italian banking system is an interesting case study, as in early 2016 Italian banks have organised the support of an equity fund, called Atlante, which has, among its main aims, the recapitalisation of “troubled” financial institutions. Each bank has decided, on a voluntary basis, whether to allocate capital in the Atlante fund: as a result, a medium size lender, Banca Popolare di Vicenza, that had been found strongly undercapitalised by the European Central Bank, has been recapitalised with the help of most of the banks in the system, thus avoiding bail-in. Another distressed bank, Veneto Banca, has followed the same path.[1]

The application has been focused on the seven banks for which CDS data are available and reliable (source: *Markit*): Banca Popolare di Milano (BPM), Banco Popolare (BAPO), Intesa San Paolo (ISP), Mediobanca (MB), Monte dei Paschi di Siena (MPS), Unicredit (UCG), Unione Banche Italiane (UBI). MPS has been considered as the “target” bank of the analysis, and it is considered in a failure or likely to fail situation. This assumption, moreover, corresponds to reality as talks have been recently undertaken between the European Central Bank, the European Commission, the Bank of Italy and the Italian Government, in order to possibly trigger a precautionary recapitalisation.

The computation of partial correlation networks relies on the time series of the expected losses for each bank, and they are reported in Figure 1.

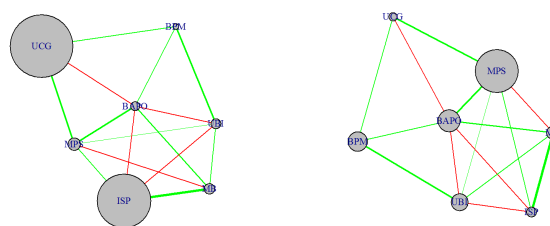


Figure 1: partial correlation networks based on expected losses (computed using CDS spreads). In the first graph (left) the size of each node is proportional to the average CDS spread of the corresponding bank, so to emphasise the importance of each financial institution in terms of its risk; in the second one (right) the size of each node is proportional to the amount of total assets of the corresponding bank, so to emphasise the importance of each financial institution in terms of its relative dimension.

Figure 2 shows a comparison between the aggregated (over time) expected losses produced by the three alternative scenarios on the entire banking system.

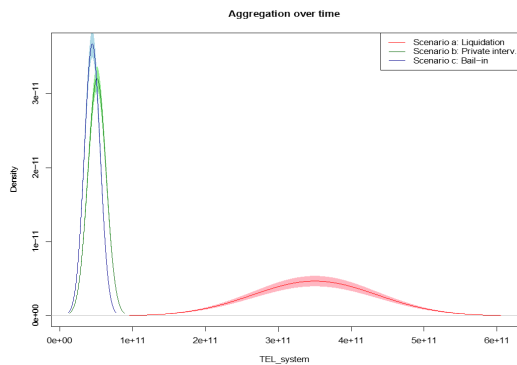


Figure 2: comparison between the expected losses produced at the system level under the three alternative scenarios (liquidation, private intervention and bail-in). The computation of expected losses takes into account balance-sheet data, CDS spreads and contagion effects.

Figure 2 shows that the expected losses at the system level are minimised under the hypothesis of a private intervention or a bail-in resolution: the liquidation scenario, in fact, appears to produce much higher and worse consequences in terms of financial stability. As previously underlined, this result also depends on the large size of MPS, which makes the shock produced in case of liquidation strongly negative in terms of propagation of expected losses.[2] On the other hand, and also confirming expectations, the bail-in resolution slightly reduces contagion effects with respect to a private intervention.

Finally, in order to understand how the increase in expected losses under the hypothesis of private intervention or bail-in depends on the level of risk of each bank, the authors have computed the first order differences between the two, by using different level of CDS spreads for MPS.

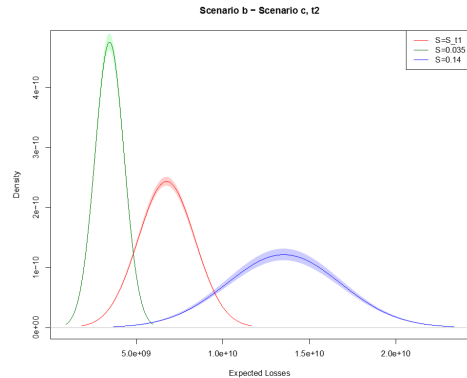


Figure 3: first order difference between the expected losses obtained under private intervention (scenario B) and bail-in (scenario C).

The results presented in Figure 3 underline that the reduction in expected losses under the bail-in scenario increases as the troubled bank in the system increases its level of risk: this means that the bail-in scenario minimises losses, and this effect is even stronger when the financial institution identified as failing or likely to fail does not recover after the resolution decision.

Conclusion

The application of the methodology presented in Giudici and Parisi (2017) to the Italian banking system reveals that, from the system's viewpoint, a private intervention and a bail-in resolution minimise losses with respect to the liquidation alternative. In addition, the bail-in resolution slightly reduces contagion effects with respect to a private intervention. We have then performed robustness checks, thus revealing that an increase in the default

probability of the distressed bank after the bail-in or private intervention increases the expected losses of the entire system: such increase is even stronger for the private intervention scenario.

Essential References

[1] Giudici, P. & Parisi, L. (2017). *Correlation networks to measure the systemic implications of banks resolution*. Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3018034

[2] Beck, T., Da-Rocha-Lopes, S., & Silva, A. 2017. *Sharing the pain? Credit supply and real effects of bank bail-ins*. Technical report N. 12058. CEPR.

[3] Halaj, G., Huser, A.C., Kok, C., Perales, C., & Van der Kraaij, A. (2016). *The systemic implications of bail-in: A multi-layered network approach*. Technical Report. ECB.

[4] BBRD (May 2014). *Establishing a framework for the recovery and resolution of credit institutions and investment firms*. Directive 2014/59/EU of the European Parliament and of the Council.

[1] The on-going supervisory discussion, however, is not limited to Italian Banks. The Spanish Banco Popular was declared as failing, and the private intervention from Banco Santander has been recently approved by the supervisory authority. And just before the SRM came into force, the Portuguese Banco de Espirito Santo was split into two bridge banks with the help of a private intervention from other banks in the system.

[2] This study, however, focuses only on the direct consequences on the balance-sheet of the other banks, while it does not assess the impact of distress events in terms of macroeconomic factors or indirect effects on tax payers.

Mercati finanziari: per l'ESMA il livello di rischio rimane elevato a causa di debolezza finanziaria e incertezza geopolitica

15/09/2017 08:57

L'ESMA ha pubblicato il documento *"Trends, Risks and Vulnerabilities Report No. 2 2017"* che individua le dinamiche principali e i fattori di rischio dei mercati finanziari europei per la prima metà del 2017 e fornisce una proiezione per il semestre successivo.

I principali fattori di rischio riguardano le incertezze circa gli sviluppi geopolitici, la resilienza della crescita economica e la sostenibilità del debito. Come conseguenza, l'ESMA ha mantenuto gli indicatori di rischio di mercato e di credito a livello *very high* (il più alto possibile) e l'indicatore dei rischi di liquidità e contagio a livello *high*. Il rischio operativo rimane elevato, con outlook negativo a causa di aggravate preoccupazioni in materia

di sicurezza informatica. Nel complesso, la valutazione dei rischi dell'ESMA per la seconda metà del 2017 rimane invariata rispetto ai primi sei mesi dell'anno.

L'analisi è completata dalla pubblicazione del report trimestrale "Risk Dashboard No. 3 2017" contenente i dati relativi al secondo trimestre 2017.

Comunicato stampa Trends, Risks and Vulnerabilities Report No. 2 2017 Risk Dashboard No. 3 2017

Fintech: consultazione del Comitato di Basilea sulle implicazioni per banche e autorità di vigilanza

15/09/2017 08:54

Il Comitato di Basilea sulla Vigilanza Bancaria ha pubblicato un documento consultivo sulle implicazioni del fintech per il settore finanziario. Il documento, in particolare, analizza l'impatto delle innovazioni tecnologiche sull'industria bancaria e sulle attività delle autorità di vigilanza nel medio e lungo termine.

Sono presi in considerazione diversi potenziali scenari futuri, con rischi e opportunità specifiche. Oltre agli scenari del settore bancario, tre casi di studio si focalizzano sull'evoluzione tecnologica (big data, tecnologia delle librerie distribuite e cloud computing) e tre sui modelli di business fintech (servizi di pagamento innovativi, piattaforme di credito e "neo-banche").

In questo contesto, il Comitato ha individuato 10 osservazioni chiave e formulato le relative raccomandazioni in materia di vigilanza.

La consultazione avrà termine il 31 ottobre 2017.

Comunicato stampa Documento di consultazione

EBA: pubblicati i risultati del monitoraggio CRD IV-CRR/Basel III al 31 dicembre 2016

15/09/2017 08:52

L'EBA ha pubblicato il nuovo report sul monitoraggio del sistema bancario europeo svolto ai sensi della disciplina CRD IV - CRR e degli accordi di Basilea III. L'esercizio, svolto in parallelo a quello condotto dal Comitato di Basilea su scala mondiale, si basa sui dati forniti da 164 banche europee di cui 45 appartenenti al Gruppo 1 e 119 al Gruppo 2.

L'analisi, condotta su dati al 31 dicembre 2016, evidenzia un ulteriore miglioramento della situazione patrimoniale delle banche europee, con un rapporto medio complessivo di Tier 1 (CET1) del 13,4% (12,8% al 30 giugno 2016). Il rapporto di leverage (LR) medio mostra un aumento di 30 punti base rispetto al semestre precedente, attestandosi al 5%, con solo il 2,3% istituzioni che non rispetta il requisito minimo di leva finanziaria

del 3%.

In tema di indicatori di liquidità, il valore medio di LCR (*Liquidity Coverage Ratio*) risulta pari al 139,5%. In particolare, il 99,2% delle banche partecipanti presenta un LCR superiore al 100% (requisito minimo in vigore a partire dal mese di gennaio 2018).

Per quanto riguarda l'NSFR (*Net Stable Funding Ratio*), le banche inserite nel campione mostrano un valore medio del 112%, con un miglioramento del 4,2% rispetto al semestre precedente. I risultati indicano, inoltre, che l'87,5% del campione rispetta il requisito minimo del 100%.

L'esercizio è stato svolto assumendo la piena attuazione del quadro CRD IV-CRR /Basel III. Questo esercizio non riflette alcuna norma convenuta dall'inizio del 2016 o qualsiasi altra misura attualmente in fase di valutazione da parte del Comitato di Basilea.

Comunicato stampa Report esercizio di monitoraggio CRD IV-CRR/Basel III al 31 dicembre 2016

Basilea III: pubblicati i risultati dell'ultimo esercizio di monitoraggio

15/09/2017 08:51

Il Comitato di Basilea ha pubblicato i risultati dell'ultimo esercizio di monitoraggio riguardante l'implementazione della disciplina di Basilea 3. L'analisi è stata svolta prendendo in considerazione i dati di bilancio al 31 dicembre 2016 di 200 banche suddivise in due gruppi, di cui il Gruppo 1 composto da 105 banche attive a livello internazionale e dotate di capitale Tier 1 superiore ai 3 miliardi di euro.

Per la prima volta, il documento di analisi fornisce non solo le medie globali ma anche la ripartizione regionale degli indicatori principali.

Dal punto di vista patrimoniale, tutte le banche del campione rispettano sia il requisito minimo di CET1 (4,5%) che il livello target del 7%, tenendo anche conto di eventuali requisiti aggiuntivi per le istituzioni di importanza sistemica globale inserite nel Gruppo 1.

L'esercizio di monitoraggio ha preso in considerazione anche i dati relativi alla liquidità delle banche: la media ponderata del *Liquidity Coverage Ratio* (LCR) per le banche dei due gruppi è pari, rispettivamente, al 131% per il Gruppo 1 (126% nel semestre precedente) e 159% per il Gruppo 2 (+1% rispetto al secondo semestre 2016). Tutte le banche considerate mostrano un LCR superiore al 70% (requisito minimo in vigore per il 2016), con più del 90% delle banche in entrambi i gruppi con un indicatore di liquidità superiore al 100%.

L'analisi del *Net Stable Funding Ratio* (NSFR) riporta una media ponderata per il Gruppo 1 pari al 116% e per il Gruppo 2 del 114%. In particolare, il 94% delle banche del Gruppo 1 e l'88% di quelle del Gruppo 2 presenta un NSFR superiore al 100%.

Comunicato stampa Report esercizio di monitoraggio Basilea III al 31/12/2016

Consultazione di Banca d'Italia sulle disposizioni di vigilanza in materia di banche di credito cooperativo

15/09/2017 08:49

La Banca d'Italia ha pubblicato un documento di consultazione contenente nuove disposizioni di vigilanza per le banche di credito cooperativo. Le disposizioni sono destinate a confluire nella Circolare n. 285 del 17 dicembre 2013 e sostituiranno integralmente quelle contenute nel Titolo VII, Capitolo 1, della Circolare n. 229/1999.

La consultazione trae origine dalla necessità di rivedere le vigenti disposizioni di vigilanza per le banche di credito cooperativo (BCC) alla luce delle profonde modifiche del quadro normativo di riferimento intervenute con la recente riforma del credito cooperativo.

La consultazione terminerà il 10 novembre 2017

Documento di consultazione

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