



Editorial - Data Standards, Information and Financial Stability



This special issue of the *Journal of Financial Stability* collects papers on the theme of “Data Standards, Information and Financial Stability”. Many of these papers were presented at a conference of the same title held at Loughborough University, UK, on April 11th–12th, 2014. The conference was part financed by Alfred P. Sloan grant number 2012-5-50 for research on the use of a global legal identifier system to enhance financial stability. Thanks are due both to *Journal of Financial Stability* editor, Iftekhar Hasan, for welcoming the idea of a special issue on this theme, and to journal manager, Clayton Lamar, for his highly professional support throughout the lengthy process of reviewing papers and assembling them for publication.

By way of motivation for this special issue, it is worth providing a couple of illustrations of the importance of data standards and information to financial stability.

The first illustrations are the data and information problems surrounding the resolution of Lehman Brothers, following its failure in September 2015. This has been a daunting challenge, both because of the complex structure of Lehman Brothers and the insufficiency of data in the form needed for resolution of claims. The group had around eight thousand operating subsidiaries, each undertaking financial investments and business operations and raising short term finance, and all ultimately owned by a single holding company, Lehman Brothers Holdings Inc, which issued publicly traded equity and long term debt (Kapur, 2015). There was no routinely maintained and systematically organised record of Lehman assets and derivative obligations and of all the competing claims on the firm. Instead it was necessary to employ thousands of professional staff to go through a mass of disaggregated records in order to sort out who owed what to whom. The realisation of Lehman assets and positions for cash and the allocation of proceeds amongst the many claimants is a task of many years that still continues today.

One unexpected and surprisingly little known outcome is that Lehman Brothers International – the London based subsidiary of Lehman Brothers that handled most of their international business – actually turned out to be rather well capitalised. As revealed by the most recent report of the joint administrators (PWC, 2016) the value realised from Lehman Brothers International assets substantially exceeded its liabilities. Once all the legal and administrative costs of administration are covered and all creditors are repaid, there will still be a remaining surplus of between £6.57bn and £7.79bn pounds. The remaining uncertainty concerns ongoing legal process about the interest payments to senior creditors (the so-called “Waterfall” cases). In the event that these remaining claims

by senior creditors are rejected in the courts and the higher surplus of £7.79 applies, then all unsecured creditors to Lehman Brothers International will not only receive their original claims paid in full, they will also receive in full the statutory interest rate due to unsecured creditors under UK law of 8% per annum compound from the date of the administration in 2008 until final settlement, and this will still leave a further £0.4bn to be paid to equity holders (the US holding company). These high recovery values from Lehman assets explain why, as reported by (Arnold, 2014), unsecured claims on Lehman Brothers International have been trading at well above par (at £1.40 to the pound or more in early 2014). The final payout to unsecured creditors now looks likely to be substantially higher still.

This does not mean that Lehman Brothers as a whole had a substantial surplus of assets over liabilities. Fitzgerald (2016) reports that by June of 2016 the court-approved payouts to unsecured creditors of the US parent company Lehman Brothers Holdings amounted to 38¢ in the dollar (with unsecured creditors in a number of Lehman Brothers Holdings US subsidiaries receiving higher payouts). Even allowing for further such payments expected in the future (the full resolution of Lehman Brothers Holdings is expected to still several more years) these unsecured creditors on the US holding company are unlikely to have their original claim repaid in full or get any compensation for the lengthy period during which these claims have been trapped in the bankruptcy process. Still an important magnifier of losses was the disorderly process of resolution under US Chapter 11, made more difficult by lack of information on assets and liabilities. Arguably Fleming and Sarkar (2014) and Kapur (2015), under the Chapter 14 arrangements for resolution of financial institutions introduced by the Dodd Frank Act, unsecured creditor losses would have been far smaller and it is possible that Lehman Brothers Inc. might even have been able to return something to shareholders.

The protracted process and high administrative and legal costs of resolution, the great uncertainty about both the valuation of Lehman assets and the determination of claims on those assets, fire-sale losses in the disorderly period that followed the initial failure and the relatively high value of remaining assets that were disposed more gradually compared to the fears of creditors and other market participants at the time of the initial failure highlights the how lack of information about assets and liabilities and the resolution of disputes over contractual obligations can contribute substantially to market uncertainty and consequent financial instability.

A second illustration comes from the problems associated with the implementation of the commitment made at the 2009

G-20 Pittsburgh summit that “OTC derivative contracts should be reported to trade repositories” (G20, 2009, p. 9). Subsequent law and regulation (e.g. the Dodd-Frank act in the US, the European Markets Infrastructure Regulation in Europe) has required such reporting but the resulting data has proved to be all but useless to regulators. A widely cited speech from a then commissioner of the Commodity and Futures Trading Commission, identifies the reasons for this:

“Specifically, the data submitted to SDRs [swaps data repositories] and, in turn, to the Commission is not usable in its current form. The problem is so bad that staff have indicated that they currently cannot find the London Whale [a reference to the massive unauthorised trades on which JP Morgan had lost several billion dollars earlier in the year] in the current data files. Why is that?

In a rush to promulgate the reporting rules, the Commission failed to specify the data format reporting parties must use when sending their swaps to SDRs. In other words, the Commission told the industry what information to report, but didn't specify which language to use. This has become a serious problem. As it turned out, each reporting party has its own internal nomenclature that is used to compile its swap data.

The end result is that even when market participants submit the correct data to SDRs, the language received from each reporting party is different. In addition, data is being recorded inconsistently from one dealer to another. It means that for each category of swap identified by the 70+ reporting swap dealers, those swaps will be reported in 70+ different data formats because each swap dealer has its own proprietary data format it uses in its internal systems. Now multiply that number by the number of different fields the rules require market participants to report.

To make matters worse, that's just the swap dealers; the same thing is going to happen when the Commission has major swap participants and end-users reporting. The permutations of data language are staggering. Doesn't that sound like a reporting nightmare?” (O'Malia, 2013)

As described in Chan and Milne (2013) an important step towards making trade repositories more useful for clarifying exposures in OTC derivatives markets and hence monitoring systemic risk has been the requirement that all such reporting, worldwide, make use of a common legal entity identifier the global LEI whose operation is now governed by the Swiss charitable foundation the Global Legal Entity Foundation. This however only addresses one aspect of the required challenge, ensuring that counterparties to derivative trades are uniquely and unambiguously identified, something that would have been useful for the resolution of Lehman Brothers and firms that failed during the 2007–2008 financial crisis.

Orderly resolution, carried out over a short time frame of a few days or weeks; or simply the challenge of monitoring of exposures in order to anticipate which institutions are severely (or critically) undercapitalised and so require regulatory intervention to prevent or prepare for failure, require aggregation of many thousands of different exposures. Assets, off-balance sheet exposures, debt and derivative claims should all be aggregated together relatively quickly and automatically, counterparty by counterparty, in order to get a reasonably accurate picture of net worth and the ramifications of failure. This in turn requires standardisation of data fields and data definitions across the industry. Agreed standard identifiers for counterparties are necessary but not sufficient for addressing all the data problems that can increase financial stability risks. But, as discussed in Houstoun et al. (2015) and Milne and Parboteeah (2015), financial services industries find it very difficult to agree on such data standards; while public authorities lack

the detailed knowledge of business process required for them to impose such standards.

These two examples illustrate the importance of data standards and information to financial stability. The papers on this theme presented at the 2014 conference were a mixture of policy analyses and research. Two papers presented at the conference (not submitted for this special issue) addressed the trade-offs and constraints in the collection of regulatory data. Bholat (2016) discusses some of the challenges faced by the Bank of England, in combining regulatory reporting from a variety of different sources in carrying out its responsibility for collecting and analysing data on prudential risk. Regulatory reporting systems are costly to set up and often determined by historical constraints that may no longer be applicable today. The still dominant conventional approach to statistical data collection is based on period collection of data in multiple forms structured like standard financial statements, designed for specific regulatory purposes and using inconsistent aggregations of the same underlying granular data. The response to the global financial crisis of 2007–2008 saw a dramatic increase in the number of such forms collected by the Bank of England, from less than 40 to more than 140, imposing substantially increased costs on the reporting entities required to complete each form, and often requiring multiple reporting of essentially the same item (for example retail deposits) using slightly different criteria for aggregation. A pilot study at the Bank has explored a different approach based on granular rather than aggregated data, focused on three of these reporting forms. This has demonstrated the possibility of considerable efficiency gains from a new approach to statistical reporting based on agreed standards for underlying granular data (a 'common statistical language'). Having recorded or collected the underlying data, either the reporters or the Bank can then use automated aggregation to fulfil the requirements of all three different forms rapidly and at low cost.

Flood et al. (2013) address a different challenge, the inherent trade-off between transparency and confidentiality in regulatory reporting. While underlying data is indeed granular, not aggregated, it is also usually confidential. Firms can suffer losses from public revelation of information on their assets, liabilities or trading positions. Concerns over privacy limit public access to financial information on individuals. Furthermore, while individual regulatory agencies may be given privileged access to confidential information, they are limited by law on the extent to which this information can be shared with other public agencies. The conventional solution is for the release of the data to be restricted to aggregation across multiple entities at a level which makes it impossible to back out underlying individual contributions (note that this is an aggregate of aggregates because the data reported by each entity is already an aggregate of granular level data across individual exposures). No sharing of underlying data between agencies is possible unless expressly legally permitted. The consequence is that confidentiality limits the transparency of the financial system, for example the ability of regulators to monitor counterparty risk and the potential for a systemic contagion from the failure of a major counterparty such as Lehman Brothers is limited by constraints on the collection and sharing of individual counterparty exposures. Developments in cryptography over the past quarter of a century are though providing powerful tools that can allow the sharing of data, and flexible aggregation of underlying granular information, without breach of confidentiality hence alleviating the trade-off between transparency and confidentiality. The paper considers two such approaches. Secure multiparty computation protocols can emulate a completely trusted and trustworthy third party who can be relied upon to access confidential data from different sources and then perform computations and share final results in any desired form consistent with confidentiality. Techniques of 'statistical privacy' provide mechanisms for ensuring that

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