Excerpts from ASIAS Project

Aggregating private and public system-wide data

The aviation regulator in the US conducts a collaborative government and industry program known as the Aviation Safety Information Analysis and Sharing program (ASIAS), which aggregates national aviation incident reports and safety data from different data sources. The program provides a comprehensive and consistent data environment that enables systemic issue analysis and identification. It also complements incident and flight operation data with contextual information on weather, terrain and air traffic control. By combining isolated data sources, the ASIAS program provides a comprehensive and consistent data environment that enables systemic issue analysis and identification. This ultimately helps detect systemic issues earlier and more effectively.

Additionally, the ASIAS board – a mix of public and private constituents including the FAA, NASA, engine and airframe manufacturers, airlines and pilot unions – flags specific issues and employs analysts to dive into data in search of answers. Ultimately, through more extensive data sharing and better safety information extraction from the data, the goal is to more effectively detect potential systemic safety issues before they occur and to mitigate them.

In financial services, large amount of data is already collected from financial institutions, but this data is not aggregated or exploited for systemic issue detection. On its own, the aggregation of data will not increase the resilience of the system. Therefore, the industry should first focus on "asking the right questions" in order to determine a set of critical systemic stability indicators that could contribute to an efficient early-warning mechanism. Development of these indicators should be adaptive to keep pace with technological and financial innovation, and could work alongside efforts to enhance data mining and management techniques.

Application to financial services

There are clear differences between aviation and financial services from a risk management perspective. Most pertinently, taking risk is undesirable in aviation, whereas it is a vital part of the business model in many areas of financial services. However, both industries generate large amounts of data in their operations and rely on it to manage risk.

Financial services firms already process significant data volumes and share them with their regulators and other parties (e.g., market and pricing providers). Similar to the aviation industry pre-ASIAS, this information is currently for the most part fragmented and not consistently structured, ultimately preventing a coherent view of risk across the system. During the recent crisis, it was therefore not possible to get a precise system-wide reading on key parameters of systemic stability, such as leverage, liquidity and counterparty connectedness.

The direct ASIAS analogy in financial services would be to create a complete system-wide database of transaction level data for every trade made to monitor risk. While such a deep and detailed data repository in the financial system is neither feasible nor desirable, the broader analogy has some merit, particularly with regards to how the aviation industry uses the aggregated data. We, therefore, propose a two-step approach for consideration:

1. Through a working group between regulators, experts from research institutions, and industry participants, determine a framework of critical systemic stability indicators for which ongoing collection of data would be beneficial (i.e. identifying the right questions to be asked). A starting point for discussions, based on lessons from the recent financial turmoil, could be indicators including the following:

Indicator	Rationale
Connectedness of counterparties	Measure of potential for contagion
Leverage	Key ingredient in most financial crises
Liquidity	Expression of viability of systemic nodes
Significant changes in transaction volumes	Potentially linked to product 'mutations' and crowded trading strategies
Concentration of exposures	Monitoring the knock-on effects from price or valuation volatility

2. For those indicators, aggregate the relevant (which does not necessarily mean most granular) data (i.e., transactions vs. positions) to both monitor ongoing systemic risk and allow deep-drill analyses in case of 'near misses'. The exact nature of a 'near miss' is harder to define in financial services than in aviation, but could include hedges that did not work as intended, or losses in single product lines that, while significant, did not 'bring down the house'. The data would have to be at a level of granularity appropriate for each indicator (e.g., aggregating the embedded leverage in many derivative products). While ultimately the analyses need to be anonymous for competitive reasons, the data should be available to the analyzing body on a named basis wherever relevant for measuring system connectedness.

   To ensure that this effort is targeted it should apply to all financial institutions where systemic risk is accumulated rather than to specific types of institutions (e.g., insurers or banks). This will ultimately allow treatment of similar operations in the same way, while not trying to fit a solution to institutions where it does not apply. It should be noted that while building such a data collection will not be trivial, a lot of the data already exist (e.g., with exchanges, regulators, BIS, Financial Market Utilities (FMUs), data providers, et al), and it will often be only a matter of improved coordination and common taxonomy between data sources, rather than building systems from scratch. The move towards centralized clearing for many products should also make this endeavor easier.

Some regulators are already going down this route in certain instances – e.g., the UK FSA is mandating near-live reporting of banks' liquidity. The Financial Stability Board is engaging in an exercise that is similar in spirit to what is described here. By getting the indicators (the 'questions to ask') right and moving away from blanket data dumps, it is our hope that such efforts can be made both less cumbersome and more effective.

Ultimately, the information should be gathered and monitored at a global level, due to the global nature of financial markets. But starting the effort at a national level with all relevant institutions (particularly collecting 'near misses' in a systematic fashion) will be initially more feasible and still be an improvement from today's situation.

The practical details of such a scheme need to be further worked through and the industry's concerns over implementation need to be addressed. However, the experience in aviation (and that of the recent financial crisis, where system-level data were often unavailable at crucial moments) suggests strongly that such a repository, if properly constructed, will be of great value to maintaining systemic stability in financial services.

When doing this, it needs to be understood that simple product-level data composition will not enhance stability on its own – the data need to be complemented with systemic understanding (as expressed in "asking the right questions").

The possibility exists that a common taxonomy as is being pursued by regulators today (i.e., the US Treasury's legal entity identification system and the ECB's common reference data concept for financial products) can allow uniquely identified and structured data to be aggregated and analyzed "on-the-fly" leaving the data in place at its point of origination (i.e., at a SIFI or FMU). Through indexing and search technology it may be possible to eliminate the actual and continual transmission of large amounts of data to a central data base which, itself, could introduce significant operational risks related to reconciliation issues, even if the data is only at the position level and only sent periodically.

To conclude, it could be argued that crashing an individual plane is unlikely to cause a systemic issue in aviation, whereas failure of a single financial institution can more easily be systemic (as proven by Lehman). So the ASIAS analogy needs to be applied carefully – it is relevant where it identifies common components or procedures that, if left faulty, could cause a plethora of crashes and thus destroy confidence in air travel. In that spirit, the 'near miss' concept in particular is very pertinent.