Data gaps in the UK financial sector: some lessons learned from the recent crisis

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Introduction

The financial crisis has changed the relationship between national authorities (be they finance ministries, central banks or supervisors) and the financial system. Around the world, various financial reforms are being considered. In the UK, the Bank of England ("the Bank") has set out in detail its views on financial reform, which include (a) capital adequacy, (b) powers of resolution and (c) the structure of the financial system.[2] Central to these endeavours is a process of monitoring the financial system, measuring its progress and steering its direction. Informed by the recent financial crisis, this paper looks not only at the many data gaps identified but also at deficiencies in the framework for collecting data.

The Bank has considerable responsibility for safeguarding the UK financial system. In particular, the Bank is the lender of last resort to banks which are solvent but in need of liquidity, and it monitors possible risks to the UK financial system, producing half-yearly *Financial Stability Reports*. The Banking Act 2009 gave the Bank powers to "resolve" distressed deposit-takers, and responsibility for oversight of the payments systems. Over the course of the last decade, its powers of data collection have not been commensurate with all of these responsibilities.

The Bank of England Act 1998 gave the Bank the power to set the official interest rate to deliver inflation close to the target set by the government. Crucially, given the purpose of this paper, it empowered the Bank to collect data – but only for monetary policy purposes. Recent announcements[3] have paved the way for the Bank also to exercise macroprudential control over the UK financial system, and will make the Bank responsible for microprudential regulation through its new subsidiary, the Prudential Regulation Authority.[4] The precise data set that will inform macroprudential decisions has yet to be fully scoped.[5] The government is

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[2] See, for example, "Too important to fail – too important to ignore", House of Commons Treasury Committee, *Ninth Report of Session 2009-10*, Volume II, Question 94, available at:
http://www.publications.parliament.uk/pa/cm200910/cmselect/cmtreasy/261/261ii.pdf.

[3] See the Mansion House speech of the Rt Hon. George Osborne MP, UK Chancellor of the Exchequer, at:
http://www.hm-treasury.gov.uk/press_12_10.htm.

[4] This is the temporary name for those functions of the UK Financial Services Authority that are being transferred to the Bank.

[5] Though a recent Bank discussion paper identifies some of the data required. See tables 4.1 and 5.1 of "The role of macroprudential policy: A discussion paper". Available at:
http://www.bankofengland.co.uk/publications/other/financialstability/roleofmacroprudentialpolicy091121.pdf.

currently consulting on the precise nature of the institutional arrangements for financial regulation in the UK, and the outcome of this will affect the collection of financial data.[6]

1. Principles underlying data collection

Oversight of the UK financial system must be informed by analysis that is underpinned by reliable data gathered within a coherent statistical framework. Tarullo (2010) enunciates some principles for financial sector data collection.[7] These can be summarised as follows:

1.   Data must meet the needs of the regulatory or supervisory function. In particular, this means timely, precise and comprehensive data.

2.   Data collection must be user-driven. To be effective, this must mean that statistics collection and financial system oversight must fall under the same governance structure. This will ensure a strong two-way dialogue between users and producers where costs and benefits are evaluated under the same roof.

3.   There must be greater standardisation of data. Again, this must be driven through an intense dialogue between the users who understand conceptually what they are trying to measure and the producers who are charged with interrogating the suppliers of the data and validating the returns.

4.   Fourth, the data collected and the associated reporting standards and protocols should enable better risk management by the institutions themselves and foster greater market discipline by investors.

5.   Fifth, data collection must be nimble, flexible, and statistically coherent so as to adapt to the rapid pace of financial innovation.

6.   Sixth, there must be a framework and powers to transmit the data to other supervisory agencies. This is not trivial: it involves inter-agency co-ordination and legislation defining what can (and cannot) be transmitted, in what form and to whom.

7.   Finally, any data collection and analysis effort must be attentive to its international dimensions. We discuss these and related issues in more detail in section 3.

On reflection, these principles are suggestive of an organisational framework for data collection and data usage. In particular, Tarullo's second principle puts the statistics function under the same roof as the regulators and supervisors. He summarises it thus: "The most desirable feature of collection and analysis under the existing setup is that it satisfies the principle that data collection and analysis should serve the end users, the regulatory agencies." And for good reason: the collection of statistics is a resource-intensive activity. Equally, the consequences of gathering incomplete, inaccurate or unreliable data can be disastrous as they can stymie decisive policy action in a crisis. This is not a trivial issue, as in many jurisdictions data collection and supervisory usage of the data are currently undertaken by different agencies, sometimes pursuing different objectives.

As section 3 makes clear, there may also be an additional set of parameters circumscribing the collection of financial data. At the national level, there is likely to be a National Accounts

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6   See "A new approach to financial regulation: judgement, focus and stability", HM Treasury, 26 July 2010, at: http://www.hm-treasury.gov.uk/consult_financial_regulation.htm.

7   See Tarullo, D, "Equipping financial regulators with the tools necessary to monitor systemic risk", testimony before the US Senate Subcommittee on Security and International Trade and Finance, Committee on Banking, Housing, and Urban Affairs, February 2010.

framework of which financial data are a subset and which would be the basis, for example, for building a national flow of funds model. At the international level, bodies like the Bank for International Settlements and Eurostat gather and publish data that must be comparable across countries.

Organising data collection

In thinking about the task of gathering data for financial stability purposes, it is helpful to think in terms of an organisational framework like that depicted in Chart 1. This approach could be applied to any statistical function which gathers economic data.

Statistics collection must meet the interests of both *users* (those who will use the data) and *producers* (those who collect the data). The activity of each of these groups can be split into two sets of issues: *operational* and *policy*. Operational issues refer to how data are collected, stored, transmitted, formatted and accessed. Policy issues refer to what precisely needs to be collected, whether the cost of collection can be justified, from whom and to whom it can be transmitted. It may also ensure that the data produced conform to a system of data collection used by other collectors – section 3 discusses the role of the United Nations (UN) System of National Accounts (SNA). In addition, the international backdrop will dictate a parallel agenda that will bring its own benefits and burdens.

Chart 1

An organisational framework for data collection
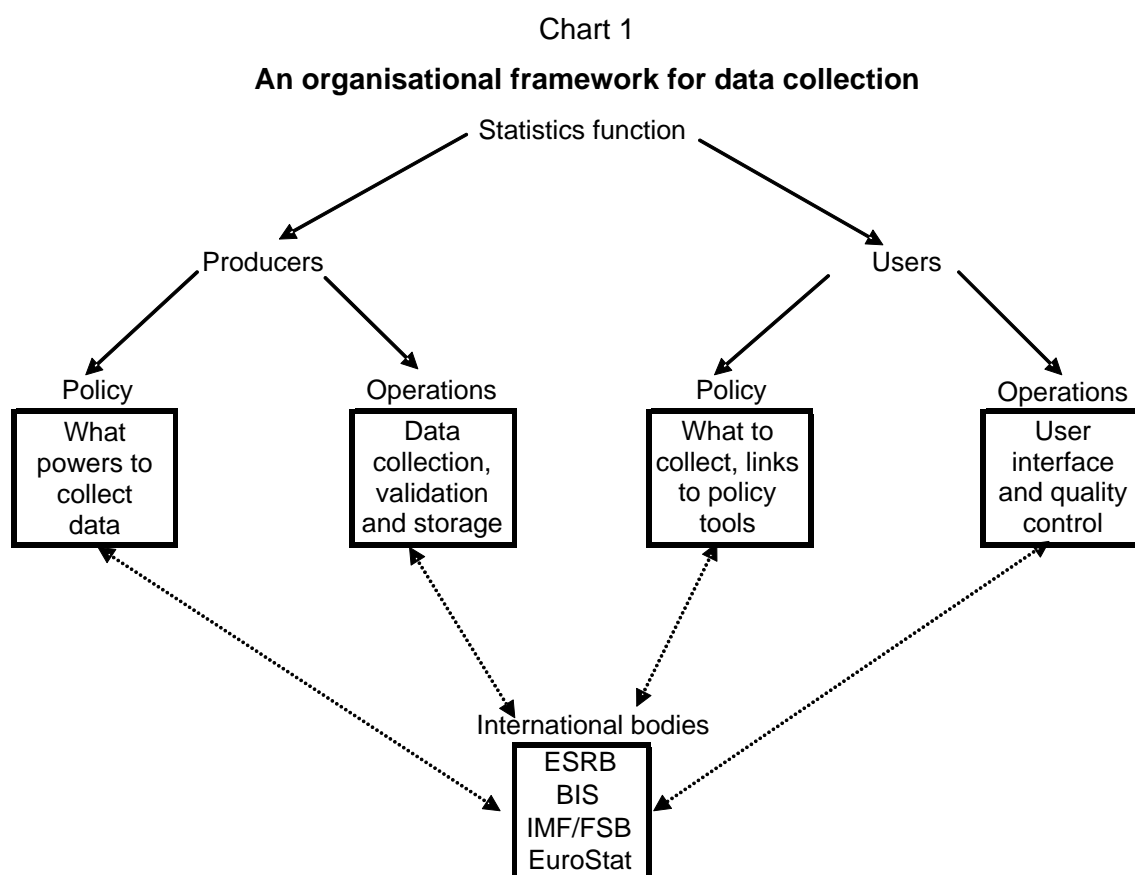
The logic of this framework will become apparent during the course of this paper as we ask the key questions: (i) what ("analysis"), (ii) how ("powers"), (iii) where ("source") and (iv) to whom ("destination")?

In section 2, we motivate the question of data collection from a *user* perspective by looking at some of the questions that challenged UK policymakers during the crisis and the data gaps

that were exposed. In section 3, we explore the process of *producing* data. It is apparent from sections 2 and 3 that there are different mindsets between producers and users, which must be married under a common purpose. This should help emphasise the value of proper governance to ensure that there is an alignment of interest between all stakeholders. We have deliberately written this paper from two viewpoints – reflecting our respective backgrounds – so as to emphasise the difference between producers and users in the arena of financial statistics. Section 4 draws these two aspects together in the context of the emerging domestic and international financial stability agendas.

2.   What were the main questions and data gaps that arose during the crisis?

As a starting point, policymakers and supervisors are users of data. A simple way to motivate the discussion of what gaps were uncovered during the crisis is to track a timeline of the crisis events and identify the key questions that arose at each point in time. It should be stressed that this is a device to motivate the issue of what data gaps might be relevant and when. In reality, many different questions were being tackled during the course of the crisis.

The crisis has been attributed to global macroeconomic imbalances, loose monetary policy and excessive credit provision to the real economy supported by rampant and sometimes reckless financial innovation. The years preceding 2006 were characterised by a build-up of financial imbalances. The subsequent period can be split into six phases (see chart 2):

1.   ***US sub-prime crisis:*** US house prices started to decline in 2006 Q3, and many sub-prime borrowers fell into arrears on their mortgages after the expiry of teaser rates led to a dramatic rise in arrears and delinquencies.

2.   ***Loss of market confidence:*** The crisis intensified during the middle of 2007 (Q2 and Q3) as hedge funds and various structured investment vehicles started to encounter problems in valuing assets and funding their balance sheets. Key events in this phase were the failure of two Bear Stearns hedge funds invested in sub-prime assets, the suspension of redemptions of investment funds run by BNP Paribas, and the bailouts of Sachsen Bank in Germany and Northern Rock in the UK.

3.   ***Crisis develops:*** From 2007 Q4 to 2008 Q2, there was a steady stream of announcements declaring sub-prime lenders bankrupt, and financial institutions started to suffer substantial write-downs on their securitisation holdings. Concerns were being raised over the solvency of certain banks and funding in unsecured money markets shortened. The key event in this phase was the bailout of Bear Stearns. More importantly, the flow of credit to the real economy started to slow down, creating an adverse feedback loop between the financial sector and the real economy.

4.   ***Panic of autumn 2008:*** The crisis peaked during 2008 Q3-Q4 with the conservatorship of the US Government-Sponsored Entities (GSEs),[8] the bankruptcy of Lehman Brothers and the bailout of American International Group (AIG). In the following weeks, governments around the world announced a range of measures to support certain financial markets and financial institutions. Policy rates were cut dramatically.

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[8]   Federal National Mortgage Association ("Fannie Mae") and Federal Home Loan Mortgage Corporation ("Freddie Mac").

5. ***Global recession:*** Global growth declined dramatically during 2008 Q4 and remained in negative territory for most G20 countries until 2009 Q1.

6. ***Focus shifts to public sector balance sheets:*** From early 2009, the markets started to focus on the fiscal consequences of the financial crisis and global recession. Sovereign credit default swap (CDS) spreads widened. This culminated in April 2010 in the creation of International Monetary Fund (IMF)/eurozone facilities.

Box 1 identifies a series of data-related questions that arose with each phase of the crisis. The complexity of the task undertaken by the Bank and by other financial authorities is evident. This task is formidable for three reasons: (1) supervision, regulation and resolution are largely local in nature, but many systemic financial institutions are complex multinational groups; (2) the financial sector comprises many institutions with dynamic and/or opaque business models, evolving faster than authorities can adapt – in particular, the shadow banking system has extended the landscape that supervisors may need to cover; and (3) imbalances in different parts of the global economy have ramifications far and wide.

Box 1

A chronology of analytical questions

Chart 2

Timeline of the crisis
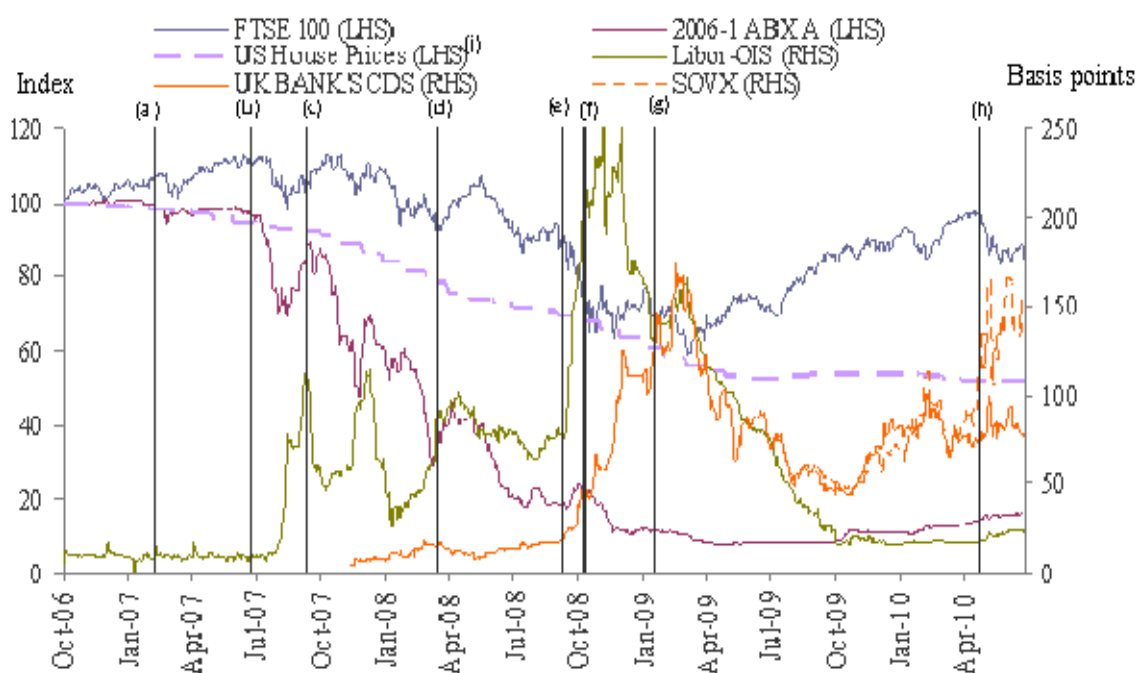
Key events on the timeline:

(a) HSBC announces substantial provisions due to expected losses on households.

(b) Bear Sterns bails out two hedge funds.

(c) Northern Rock bailed out

(d) JPMorgan buys Bear Stearns.

(e) GSEs put into conservatorship, Lehman fails and AIG bailed out

(f) 1st bank bailout packages

(g) 2nd bank bailout packages

(h) 1st Greek bailout package

(i) This index is based on the worst-performing states mentioned in Michael Lewis' "The Big Short" chronicle of the US sub-prime crisis.

Sources: Bloomberg, Datastream, Bank of England calculations.

Table 1

Financial crisis: key stages, questions and data gaps

Event	Question
1. US sub-prime crisis	• What is the importance of the sell-off in US house prices?
2. Loss of market confidence	• Does the US sub-prime mortgage market matter?
	• Who is affected by the breakdown in securitisation markets?
3. Crisis develops	• Who is lending to the banks?
	• Are there other banks like Northern Rock around and how do we spot them?
	• Does Bear Stearns matter? Are there other banks like Bear Stearns around?
	• How big are banks' exposures to sub-prime and other securitisations?
	• How good are banks' household and commercial property loan assets?
	• How do we stress test these?
4. Panic of autumn 2008	• Why are Libor-OIS spreads so wide and do they matter?
	• Does the widening in UK sovereign CDS spreads matter?
	• Why are capital markets shut?
	• Do the GSEs matter?
	• Does Lehman Brothers matter?
	• How much capital do banks need?
5. Global recession	• How much is needed in loan guarantees?
	• How much asset insurance is needed?
	• What should the banking system look like?
	• How do we implement macroprudential policies?
	• Can we improve microprudential supervision?
6. Focus shifts to public sector balance sheets	• How to interpret the widening of sovereign CDS spreads of Greece, Portugal, Ireland and Spain?

Lastly, the role of contagion in the financial crisis greatly expands the range of data that might be relevant to assessing the implications of various events which took place during the financial crisis.[9] Contagion is partly the result of uncertainty due to a lack of information or the lack of a framework to process information, or – to paraphrase a former US Defence Secretary – known unknowns and unknown unknowns. As an example, the price falls on collateralised debt obligations (CDOs) of sub-prime mortgages issued originally with a AAA rating raised investors' concerns as to whether other AAA-rated structured finance securities – including prime residential mortgage-backed securities (RMBS) and even banks' covered

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[9] See "Rethinking the Financial Network", Andrew Haldane, Executive Director for Financial Stability (2009), available at: http://www.bankofengland.co.uk/publications/speeches/2009/speech386.pdf.

bonds – were likely to suffer credit losses. Some of the questions raised were: How do CDOs work? To what extent are structured finance ratings specific to the structure? Are the ratings of different ratings agencies different because of the models they use? Is there "read-across" to other structured finance securities?

Underlying the high-level policy issues is a series of questions underpinning analysis of the potential answers:

- What data exist?

- Who has the data?

- Can the Bank be given the data?[10]

- Is the data set complete and well defined or does it require further manipulation?

- What assumptions underlie further manipulation of the data?

- Are the data reliable?

- Can the Bank publish the data in their current form or in some other (possibly aggregated) form?

- Can the Bank pass the data on to other agencies both within the UK and abroad?

These are the same recurring questions that have formed part of the Bank's internal stocktaking of data gaps in financial stability. This exercise has sought to learn from the crisis and set out an agenda for the future. In particular, it has highlighted the need to take advantage of institutions that naturally collect data, such as payment systems, clearing houses, futures and options exchanges and trade repositories. Implementation of the new regulatory arrangements in the UK presents a potentially unique opportunity to align the interests of data producers and data users and to ensure that the authorities can collect the relevant data.

Monitoring the broader financial system

The crisis started in the US sub-prime market and progressively infected the mainstream banking sector and the global real economy. It highlighted that focus on one part of the financial sector – such as regulated banks – runs the risk of missing the implications of the activities of other parts of the system. As Paul Tucker, the Bank's Deputy Governor for Financial Stability, observed at the beginning of 2010:[11] "The lesson … is to look at the economic substance, not the legal form" and "we need to think through how to avoid the problems of the past few years replicating themselves beyond the perimeter of the regulated banking sector". In making this remark, the "bank-like" functions of non-bank financial firms are highlighted. These economic functions include deposit-taking, provision of credit and maturity transformation: borrowing short to lend long. And some of these "non-bank" firms provide these banking functions using non-traditional technologies, such as securitisation of loan cash flows, structured investment products, and money market mutual funds, to name but a few. These technologies in turn rely on a host of other supporting markets such as repo

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[10] During the crisis, the Bank was reliant on data collected by the Office for National Statistics (ONS), the Bank itself, the Financial Services Authority (FSA) and other international agencies. In these cases, the data were acquired pursuant to legal powers, such as the Bank of England Act 1998 and FSMA 2000. However, at certain junctures, individual institutions voluntarily provided particular information in order to facilitate the authorities' decision-making.

[11] "Shadow Banking, Financing Markets and Financial Stability", Paul Tucker, Deputy Governor, Financial Stability, January 2010. See http://www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf.

markets, listed options and futures exchanges, OTC swaps and options … the list is potentially endless.

An *atlas* of financial risk

The challenge for regulatory authorities is to understand the flow of risk in the financial system. Pozsar et al (2010)[12] show how complex such a map can be for a national financial system. This is not just an exercise in constructing a single map of the financial system – would that it were so easy. In fact, we need an *atlas* comprised of maps containing the same regions, but whose interdependencies correspond to different types of risk, for example, term unsecured credit risk, term secured credit risk, currency risk and interest rate risk. Imagine that each page of the atlas might show the regions connected by a different mode of transport (or risk category: interest rate risk, credit risk, volatility risk, etc). And some pages of the atlas might show certain regions in greater detail (sub-sectors) or lying on tectonic plates (vulnerable institutions). Piecing all the countries together and representing multinational financial institutions (which operate across borders as branches and/or subsidiaries under one corporate umbrella) poses yet another challenge. Regulators and supervisors are conscious of the complications arising from the international dimension; indeed, Cecchetti et al (2010) assert that "global risk maps are the holy grail of systemic risk monitoring".[13]

This atlas is ever evolving. Unlike natural atlases, the pace of evolution is rapid and reflects genuine innovation in finance, but also firms' efforts to arbitrage regulatory and tax regimes. Firm-level data could be supplemented through the monitoring of transaction flows from exchanges, clearing systems and trade repositories.

3.   A central bank statistician's perspective on the practicalities of implementing a new data collection

Between the identification of data gaps and the filling of those gaps, a significant endeavour must be undertaken. The necessary steps are outlined in broadly the order in which they need to be taken, although in reality many of them would be implemented concurrently.

Understanding what users want, and from whom

Once the user has determined the concept to be measured, the typical starting point for the discussion with the statistics compiler will be to establish in general terms the quality of the statistics required. This will include discussion of the various dimensions of quality, including:

- accuracy: how close do the statistics need to be to the (unobservable) true values – eg how much, if any, sampling error can be tolerated;

- coherence: how reliably can they be combined with related statistics to produce useful products, ratios, etc;

- reliability: how close do the initial estimates need to be to later or "settled" estimates of the data; timeliness: what is the optimal length of time between the availability of the statistic and the end of the period in which the activity measured took place; and

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[12] See Pozsar, Z, Adrian, T, Ashcraft, A, and Boesky, H (2010), "Shadow Banking", *FRBNY Staff Report No. 458, 2010.*

[13] See Cecchetti, S, Fender, I, and Mcguire, P (2010), "Toward a global risk map", *BIS Working Papers, No. 309.*

- at what frequency do the statistics need to be available?

Other key considerations include identifying the universe (the sampling frame) of potential reporters, and making an initial assessment of the likelihood that the reporters' financial reporting systems will capture the data required to meet the quality requirements.

Under what powers can the data be collected and shared?

Typically, statistics compilers' powers to gather and disseminate data will be legally defined. For the Bank they are set out in the Bank of England Act 1998 and supplemented by the Banking Act 2009.[14] The current position is that these powers permit the Bank to collect data for monetary policy purposes, to fulfil its own regulatory responsibilities, and to disclose to certain institutions information it thinks relevant to the financial stability of individual financial institutions, or one or more aspects of the financial systems of the UK.

Is there an overarching framework of concepts and classifications within which the new data will sit?

A key question when introducing a new data collection is whether it is intended that the new collection will sit within – or articulate with – an overarching framework of concepts and classifications. If this is the case, the natural starting point when viewed through the lens of the Bank's monetary and financial statistics division, whose Code of Practice commits it to compile statistics in accordance with internationally recognised standards,[15] would be those set out in the UN System of National Accounts[16] and the associated international statistical Standards and Manuals.[17] The advantage of this approach is that the statistics compiled would then have a number of desirable characteristics for any user attempting to tackle the types of questions discussed in Section 2, including:

- international compatibility;

- consistency of concepts across different parts of the framework (eg stocks, flows and associated income) to allow combinations that produce analytically useful ratios; and

- concepts that are well established/fixed for long periods to allow the production of time series of sufficient length to permit analysis.

But it may be that for this particular exercise the data do not readily lend themselves to collection/compilation that is fully consistent with those concepts and classifications in the SNA and the associated Manuals and Standards. In these circumstances, there is a mechanism for the examination of areas of economic interest not covered in the central National Accounts but which retains key elements of the framework, through the use of satellite accounts. Satellite accounts are linked to, but distinct from, the central National

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[14] See Appendix 2 of the Bank's Statistical *Code of Practice*, which contains extracts from legislation relevant to information powers and obligations (pp 43–50), available at the following link:
http://www.bankofengland.co.uk/statistics/about/code.pdf.

[15] See Section 3.1 in the Bank of England's Statistical Code of Practice, available at:
http://www.bankofengland.co.uk/statistics/about/code.pdf.

[16] Available at: http://unstats.un.org/unsd/nationalaccount/SNA2008.pdf.

[17] For example, the European System of Accounts 1995 and the Monetary and Financial Statistics Manual of the IMF, available at
http://circa.europa.eu/irc/dsis/nfaccount/info/data/esa95/en/esa95en.htm and
http://www.imf.org/external/pubs/ft/mfs/manual/index.htm, respectively.

Accounts. They therefore provide a framework for analysis that is linked to the central National Accounts framework that is itself the basis for much economic analysis.

Satellite accounts have been developed to address a variety of user needs; examples include health, tourism and unpaid household production. But it is perhaps the environmental satellite accounts in which this technique is most fully developed.[18] And to the extent that environmental satellite accounts aim to capture externalities, it has parallels with some of the discussion there has been of the financial crisis.[19]

Determining the reporting panel

Identifying potential reporters is key to any new data collection. The starting point will typically be to identify the sector/sub-sector of the economy from which the data are required and then to translate this into a group of specific institutional units using a business register. A business register is a list of businesses, usually populated using a combination of tax and other administrative data. It will typically contain information on each business in a given geographical location, covering dimensions such as Industrial Classification,[20] number of employees, turnover, legal status and country of ownership. The business register provides the basis for assembling the sampling frame, the universe from which the reporting panel will be drawn. For example, if the focus of the new data collection is an aspect of the activity of hedge funds, the register will provide a list of all hedge funds operating in the geographical location of interest together with information on each firm such as that outlined above.

Once the sampling frame has been assembled, the next step is to determine the reporting panel. In broad terms, the options run from a census approach, under which all of the members of the sampling frame report data, through top slicing and stratified sampling down to a simple random sample. The decision as to which of these approaches is taken will depend on a range of factors – some of which are discussed in more detail in Box 2 – and is ultimately likely to be determined through some form of cost-benefit exercise.

Applying cost-benefit principles

The quality – using this term in its broadest sense, to include most of the aspects of collecting and compiling statistics – of the new data collection is likely to be determined using some form of cost-benefit approach. The Bank has developed a framework for applying cost-benefit analysis to its monetary and financial statistics.[21] This framework provides the starting point for assessing new data requests (although it is likely that this framework will be reviewed in the light of the Bank's new micro/macroprudential responsibilities, the overarching principles could be expected to be retained). While this is not the place for a long

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[18] The interim Integrated Environmental and Economic Accounts was published in 1993 and an updated version released in 2003: see http://unstats.un.org/unsd/envaccounting/seea.asp. Work is currently under way to revise this further with a view to publication in 2012.

[19] For example, see: "The $100 billion question", Andrew Haldane, Executive Director for Financial Stability, March 2010. Available at: http://www.bankofengland.co.uk/publications/speeches/2010/speech433.pdf.

[20] A number of different classifications are used throughout the world. In the UK there is the Standard Industrial Classification (SIC). The Nomenclature statistique des activités économiques dans la Communauté européenne (NACE) is the European standard. There is also the North American Industry Classification System (NAICS) and the International Standard Industrial Classification of All Economic Activities (ISIC), set by the UN.

[21] See "Cost-benefit analysis of monetary and financial statistics – a practical guide", available at: http://www.bankofengland.co.uk/statistics/about/cba.pdf.

description of the process, it might be helpful to draw out a few of the key components, for example:

- Estimating set-up and ongoing costs to reporters for various options for meeting users' needs, eg different levels of granularity for instrument/counterparty splits; or, if flows are required, are these gross flows or are the net flows derived from balance sheet levels acceptable?

- Estimating set-up and ongoing costs to the compiler.

- Estimating benefits to the user requesting the new collection, and to the wider user community.

- Combining estimated costs and benefits to inform the decision whether or not to go ahead with the new data request, and if the decision is to go ahead, to determine which option offers the largest net benefit.

- Establishing mechanisms for prompt response to ad hoc data requests.

In practice, specifying the costs and benefits of statistical collections in monetary terms has proved challenging. An alternative has been to focus on estimating *relative* costs and benefits, an exercise which has been completed for the Bank's existing statistical collection. A new data request would be placed into this context, the rationale being that if the proposed collection was shown to have relatively high benefits and low costs it would go ahead immediately, while if the exercise showed the proposed collection to have relatively low benefits and high costs it would be challenged and potentially revised – or, in the extreme, it may not go ahead at all.

Quality assurance in the early periods of a new data collection and in steady state

There are a number of challenges when attempting to ensure that the data reported and compiled in the early periods of any new collection are fit for their purpose, and some approaches for mitigating the associated risk. The key challenges include: (a) that reporters have not fully understood the reporting requirements, (b) that reporters' systems do not enable them to fully capture the dimensions of the data required (eg insufficient granularity[22] on counterpart or instrument), and (c) that the compiler does not have enough information reliably to assess the plausibility of reported data. Challenges (a) and (b) are best mitigated through good communications between compiler and reporter in the period leading up to the introduction of the new collection. For (c), an attempt can be made to use any associated data that are already reported in order to assess plausibility.

Once a new data collection has settled and the back-run and available vintages are sufficient, full data quality assurance can take place. The Bank has set out its approach to doing so in its *Data Quality Framework.*[23] This framework is designed to enable users of the monetary and financial statistics currently produced by the Bank to be better informed about the various dimensions of the quality of these data and could be expected to be applicable to data collected for macroprudential purposes. It discusses a range of data quality dimensions, including accuracy, coherence, frequency, reliability and timeliness.

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[22] Increasing granularity raises issues of disclosure for statisticians, which may imply a review of publication policy and a reassessment of the boundary between "information" and "statistics."

[23] Available at: http://www.bankofengland.co.uk/statistics/about/dqf.pdf.

Australia – an example of a centralised data collector

Once data gaps have been identified and broad approaches to filling them have been agreed on, it is likely to be helpful when considering the detailed practicalities of collecting and compiling the data to consider examples of current good practice in the collection of financial sector data. One such example is Australia's adoption of a single data collection for statistical and regulatory purposes from the bulk of its financial corporations sector.[24] In 1997 the Wallis Committee of Inquiry into Australia's financial system recommended wide-ranging reforms. The Australian Federal Government accepted the Wallis Committee's proposals and by mid-1999 the necessary legislation had been put in place. One result that flowed from these changes was the development of an integrated framework for the collection of information. Prior to the introduction of the new framework, information for regulatory and statistical purposes was collected by a number of disparate agencies.[25]

After the introduction of the integrated framework a newly established agency – the Australian Prudential Regulation Authority (APRA) – assumed responsibility for collecting information from the bulk of the agencies mentioned above. However, the ABS maintained collections for entities not subject to APRA's prudential supervision. A key element in the project to develop the integrated framework was to review, harmonise and modernise the existing information collections from the agencies listed above. Central to this task was the establishment of the Tripartite Data Committee (TDC) – formed from representatives of the ABS, the APRA and the Reserve Bank of Australia (RBA) – which was responsible for reaching agreement on the single set of data items to be reported by each entity, and the underlying definitions applying to these data items. Determining the single set of data items and associated definitions required a number of steps to be followed. These are summarised below:

1. Deciding on the suite of returns required and the frequency at which each should be reported.

2. Settling on the individual data items to be collected on each return – as part of this process, an inventory was compiled of data items currently being collected; those that were duplicates or were collected but not used were discarded.

3. The quality of data currently reported was assessed.

4. For each data item collected, a single definition was agreed on.

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[24] This single collection covers institutions holding more than 85% of the financial assets held by residents. The bulk of the residual is held by mutual funds and securitisation trusts and data from these is collected outside the single collection.

[25] These are summarised below:

 • The Reserve Bank of Australia (RBA) and the Australian Bureau of Statistics (ABS) collected information from banks;

 • The RBA and the states and territories collected data from other authorised deposit-taking institutions;

 • The ABS collected information from mutual funds;

 • The ABS collected information from institutions carrying out securitisations;

 • The ABS and the Insurance and Superannuation Commission collected information from life offices;

 • The Insurance and Superannuation Commission collected information from general insurers;

 • Information from superannuation funds was collected quarterly by the ABS and annually by the Insurance and Superannuation Commission; and the ABS collected foreign investment from all types of financial institutions.

While some parts of this exercise were straightforward, others were found to be complex and time-consuming – in particular agreeing on some of the definitions – and involved extensive liaison with stakeholders from the reporting institutions.

Australia's integrated framework for the collection of information has now been in place for almost a decade and a number of benefits have been identified, including: consistency of standards and definitions has reduced asymmetries between financial corporation sub-sectors, as well as improving data quality more generally; data collected primarily to serve microprudential purposes can be reliably combined to produce aggregates that can be used at a macro level; benchmark data can be produced from defined peer groups, which can then be fed back to reporters to assist them with their own internal prudential analysis; and duplicate (or multiple) reporting of the same data items is prevented, therefore reducing the compliance burden on reporters. The data collection arrangements have been formalised in a Memorandum of Understanding which outlines the respective roles and responsibilities of the participants.

Tapping existing data sources

Good practice with regard to the use of existing data sources is also likely to repay study. Some examples of potential data sources are:

- trade repositories

- credit registers

- cheque and securities clearing systems

- stock, futures and options exchanges

For example, credit registers are databases that contain information on a number of different characteristics relating to both new lending and amounts of lending outstanding. Typically, these will include: amount drawn/undrawn on a facility, currency of denomination, maturity, type of instrument, whether the loan has a guarantee, and whether the loan is in arrears. They also contain information relating to borrowers, including: residency, address, National Accounts sector and, if applicable, SIC. Apart from Luxembourg, all of the EU countries have credit registers: there are 14 public credit registers and 22 private credit registers.[26]

While credit registers are potentially a rich source of information, a number of practical considerations need to be considered regarding their usefulness in the context of data gaps facing a macroprudential regime, including:

- The contents of credit registers can differ markedly between countries regarding the level of detail they contain about individual loans/borrowers, as well as thresholds for inclusion in the register.

- Some registers are set up on a loan-by-loan basis, whereas others are organised by borrower.

- The main purpose of credit registers is to facilitate the sharing of credit information within the financial system, especially among banks.

- The data in credit registers may be privately owned and therefore not automatically accessible to regulatory authorities without legislation.

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[26] Based on Jentzch, N (2007), "Financial privacy: An international comparison of Credit Reporting Systems", Springer.

Box 2

Why are financial sector data different from other economic data?

The type of data we wish to gather, post-crisis, has greater scope and depth than what has been collected before. An exercise in constructing a financial risk atlas involves gathering data in at least four dimensions: which firms do we cover, who are they exposed to, what risk factors link the firms[27] and what are the maturities of the financial transactions? Owing to the dynamic nature of financial firms, the data must be gathered at a frequency which allows for an adequate understanding of the firm's business model. As firms are constituted as financial groups comprised of multiple entities in different countries, it can be a challenge getting aggregate or consolidated data at the firm/group level.

Tail risk

In financial risk assessment, the distribution of the data matters, especially the tail part of it. One aspect of systemic risk involves an assessment of the risk of contagion arising from the failure of a small firm. Simply sampling the population of firms may miss developments in the tail of the distribution. The crisis has taught that contagion effects can start with the failure of institutions on the periphery of a sector but it may not end there. So in many cases, assessing systemic and/or firm-specific risk will involve an almost census-like data collection effort. Collecting data from a near census is generally feasible for those sectors/sub-sectors of the economy where the sampling frame is relatively small – for example, in the UK, the MFI sampling frame currently consists of fewer than four hundred reporting entities. But for other sectors/sub-sectors with much larger sampling frames, census/near-census data collection is likely to be a very substantial task, particularly if the data are required at anything other than a low frequency.

Frequency of data

In times of financial stress, financial data are often required at a weekly or even daily frequency. Protocols should exist so that even if the data are not produced on this basis in a benign steady state, high-frequency data provision occurs at short notice in times of heightened supervision.

Dimensions of risk

Developments in modern finance mean that raw notional amounts are no longer sufficient to represent the various risks of financial products. Each financial instrument may be described by an array of risks which in turn may change with the market environment.

Understanding network risk and contagion risk

As is clear in Box 1, understanding the implications of a firm's failure (like Lehman Brothers) involves a detailed understanding of its interaction with other firms across a range of asset classes and risk categories. Drawing on examples from medicine and physical science, Haldane (2009) explains that this is a substantial undertaking.[28] The "atlas" analogy used earlier is useful here: each page of the atlas may depict the global network defined by a certain financial relationship, eg secured borrowing lines, unsecured borrowing lines, credit exposures governed by credit support annexes (CSAs), etc. The mechanism by which a shock (like the failure of a firm) is transmitted throughout the network may depend on how that firm is linked to the rest of the financial network and what are the dynamics of these contracts (network links) in times of stress. For example, in the case of AIG, the effect of CSAs was to create a cliff-edge effect whereby it had to post vast amounts of liquidity once its credit rating had been sufficiently downgraded.

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[27] Developments in financial markets mean that there is an extensive list of risk factors. For example, many derivative contracts are sensitive to interest rates, implied volatility, dividends, borrowing costs and the underlying assets determining the payoff.

[28] See "Rethinking the financial network", Andrew Haldane, Executive Director for Financial Stability, speech delivered at the Financial Student Association, Amsterdam, April 2009, available at: http://www.bankofengland.co.uk/publications/speeches/2009/speech386.pdf.

4.   Financial data in the future – UK and international agendas

The agenda for collecting financial sector data will be driven by: (i) the design of the regulatory/supervisory architecture, (ii) the framework for supervision and risk assessment, (iii) a willingness (or otherwise) to impose costs on the financial sector, (iv) the level of resourcing of data collection function, and (v) the standards and requirements set by international bodies and peers.

FSB/IMF "List of 20" Data Gaps

Efforts to identify data gaps and to work up proposals for how they might best be filled are moving forward at the international level. In their report to the G20 in October 2009 the FSB/IMF made 20 Recommendations for data improvements. [29] At a conference hosted by the FSB/IMF in April 2010, officials from G20 central banks and finance ministries provided updates on progress, and on the basis of feedback received the FSB/IMF provided an updated Report for the June 2010 G20 meeting.[30] Among the areas identified as candidates for data improvements, perhaps the two that stand out are those that address the linkages between financial institutions, both within countries and across borders.[31]

ECB/ESRB

Within Europe, there is a programme of work under way coordinated by the European Central Bank (ECB) to provide support for the European Systemic Risk Board (ESRB).[32] As at August 2010, the relevant draft legislation on the role and powers of the three European Supervisory Authorities that will act in conjunction with the ESRB is still subject to co-decision between the European Parliament and the European Council.[33] What now does seem to be clear is that while the Parliament remains willing to negotiate on the detail, it has taken a strong view that the European authorities need to be equipped with sufficient powers to act to prevent future crises, and to strengthen the single market.

Against this backdrop, the ECB Banking Supervision and Statistics Committees have been attempting to anticipate what the information needs of the ESRB are likely to be, to ensure that the Board is properly briefed from its inception. Once the legislative issues are resolved, the ESRB is expected to be required to be operational quickly. The ECB aims to make available as much data relevant to financial stability as is possible from existing sources or from enhancements currently in hand. These will be supplemented by new data collections and infrastructure in due course, with key areas on which attention will focus including the following:

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[29]   Available at: http://www.imf.org/external/np/g20/pdf/102909.pdf.

[30]   Available at: http://www.imf.org/external/np/sec/pr/2010/pr10155.htm.

[31]   These are described in Recommendations 8, 9 and 11 of the October 2009 G20 report. Recommendations 8 and 9 focus on the interlinkages between, and systemic importance of, financial institutions. Recommendation 11 covers improvements in international banking data and, in particular, increased granularity in the sectoral breakdown available in the data: for example, separating out "non-bank" into "non-bank financial institutions" and "non-bank non-financial institutions".

[32]   See "Proposal for a regulation of the European Parliament and of the Council on Community macro prudential oversight of the financial system and establishing a European Systemic Risk Board" , COM(2009) 499 final, available at:
http://ec.europa.eu/internal_market/finances/docs/committees/supervision/20090923/com2009_499_en.pdf.

[33]   See http://www.europarl.europa.eu/news/expert/infopress_page/042-77910-186-07-28-907-20100706IPR77909-05-07-2010-2010-false/default_en.htm.

- Analysing systemic risk within the European banking sector: a key objective identified under this heading is the production of quarterly consolidated bank balance sheet data within three months of the reference period end.

- Securities holding statistics: the focus is high-quality granular data (for example, including a full sectoral breakdown of the holders, and an extensive instrument, maturity and currency breakdown of the securities held) that is based on security-by-security information.

- Fully integrated financial and non-financial sectoral accounts for the EU, with a timeliness of 90 days. The challenge of improved timeliness is amplified by the likely requirement that the level of detail required will be greater than is generally available in current sectoral accounts, and of combining data for the euro area and non-euro area Member States.

- Improved quality of data on insurance companies and life/pension funds.

Senior Supervisors Group

There are interesting lessons from the approach of the Senior Supervisors Group (SSG), comprising supervisors from seven countries with large financial centres.[34] During the crisis in the autumn of 2008, supervisors in the SSG decided to collect counterparty exposure data from systemically important banks. The initial data collection effort consisted of 13 firms. The reporting group has since been expanded to 16, and will ultimately include approximately 25 firms. The SSG continues to collect the data, which consist of reporting banks' largest exposures to individual counterparties by type of credit instrument and type of counterparty. The results of analyses of these data are currently shared among the supervisors in the SSG under strict protocols, such as aggregate exposures without counterparty details, and with some degree of anonymity in the shared information. In the future, the sharing of counterparty exposure data among supervisors in the SSG will ultimately be governed by a memorandum of understanding that would allow exposures among reporting firms to be identified by name.

A flow of funds model for the UK

In the UK, much work needs to be done to fill the data gaps identified from the financial crisis. One issue is the development of a flow of funds model for the UK. A flow of funds model tracks financial activity across the whole economy – not just the financial economy. In the words of Godley and Lavoie,[35] all money "comes from somewhere and goes to somewhere". As such, it is potentially an invaluable tool for spotting macroeconomic imbalances. At present, the data which are available are not sufficiently granular nor of sufficiently high quality to support policymakers in a timely fashion. Progress on this issue is likely to require close cooperation with the UK's Office for National Statistics.

All of this is a great and important challenge. In relation to the task that lies ahead, one might quote Churchill: "This is not the end; it is not even the beginning of the end, but it is, perhaps, the end of the beginning."

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[34] UK, US, France, Germany, Switzerland, Canada and Japan.

[35] Godley, W and Lavoie, M, (2007), "Monetary Economics", Palgrave.

References

Bank of England (2006), "Cost-benefit analysis of monetary and financial statistics – a practical guide"
http://www.bankofengland.co.uk/statistics/about/cba.pdf.

Bank of England (2009), "The role of macroprudential policy: A discussion paper"
http://www.bankofengland.co.uk/publications/other/financialstability/roleofmacroprudentialpolicy091121.pdf.

Bank of England (2010), "Statistical Code of Practice June 2010"
http://www.bankofengland.co.uk/statistics/about/code.pdf.

Cechetti, S, Fender I and McGuire P (2010), "Toward a global risk map", *BIS Working Papers, No. 309.*

European Commission (1995), "European System of Accounts 1995"
http://circa.europa.eu/irc/dsis/nfaccount/info/data/esa95/en/esa95en.htm.

European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations and World Bank (2008), "System of National Accounts 2008"
http://unstats.un.org/unsd/nationalaccount/SNA2008.pdf.

Godley, W and Lavoie, M, (2007), "Monetary Economics", Palgrave.

Haldane, A (2009), "Rethinking the Financial Network"
http://www.bankofengland.co.uk/publications/speeches/2009/speech386.pdf.

Haldane, A (2010), *"The $100 billion question"*
http://www.bankofengland.co.uk/publications/speeches/2010/speech433.pdf.

HM Treasury (2010), "A new approach to financial regulation: judgement, focus and stability", *Consultation Document, 26 July 2010*
http://www.hm-treasury.gov.uk/consult_financial_regulation.htm.

House of Commons Treasury Committee (2009), "Too important to fail – too important to ignore", *Ninth Report of Session 2009–10, Volume II*
http://www.publications.parliament.uk/pa/cm200910/cmselect/cmtreasy/261/261ii.pdf.

International Monetary Fund (2000), "Monetary and Financial Statistics Manual"
http://www.imf.org/external/pubs/ft/mfs/manual/index.htm.

Jentzch N (2007), "Financial privacy: An international comparison of Credit Reporting Systems", Springer.

Pozsar, Z, Adrian, T, Ashcraft, A, and Boesky, H (2010), "Shadow Banking", *FRBNY Staff Report No. 458.*

Tarullo, D (2010), "Equipping financial regulators with the tools necessary to monitor systemic risk", *Testimony before the US Senate Subcommittee on Security and International Trade and Finance, Committee on Banking, Housing, and Urban Affairs, February 2010.*

Tucker, P (2010), "Shadow Banking, Financing Markets and Financial Stability"
http://www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf.

United Nations Statistics Division (2003), "Integrated Environmental and Economic Accounting 2003 (SEEA 2003)"
http://unstats.un.org/unsd/envaccounting/seea.asp