Data issues in the context of the recent financial turmoil (27 August 2008)

Paul Van den Bergh[1]

Financial markets, particularly those for credit instruments in the more mature financial centres, have witnessed major turmoil since the summer of 2007. Already a number of suggestions have been made by policy makers and market participants to improve the functioning of the financial system. However, unlike earlier periods of stress or crisis, there have been no major calls for new data or improvements to existing datasets.[2] This does not mean that central banks, individually and collectively, have not faced major challenges in monitoring market developments against the background of evolving pressures and have not struggled to obtain timely and relevant data to assist in formulating their policy response. This note illustrates a number of specific issues that may have arisen in this context.

Prices of financial assets

The variables most readily used to track ongoing developments in the financial system are data for prices of financial assets. They typically include prices and indices for equities and bonds as well as a range of interest rates and exchange rates. A new class of price data have become available in recent years, in line with ongoing financial innovations. Prices exist for futures, option and swaps on a wide range of financial products (interest rates, exchange rates, commodities). Markets for credit default swaps have developed rapidly in recent years and, as a result, prices are now available for a broad range of private and sovereign credit risks. Indices based on CDS are also available. In the money markets, overnight interest rate swaps have grown rapidly. Prices of many of the newer financial instruments can be used to derive additional information, such as implied volatilities, expected default rates and expectations of future policy interest rates. They have also been used by some to develop measures of risk premia, market liquidity or risk appetite/aversion.

Most data on prices of financial assets are available from, or are calculated by, commercial data providers. Some of the indices produced by them, in particular CDX, iTraxx, CMBX, have become widely-used benchmarks.[3] However, the methodologies used to calculate these prices and the derived indices are not always clear. Moreover questions have been asked about the representativness of prices available from commercial data sources in the context of much-reduced (or even absent) trading in various instruments.

---

[1] The views in this note are those of the author and not necessarily those of the BIS or its member central banks. For any questions, please contact Mr Paul Van den Bergh, Head of Information, Statistics and Administration, Monetary and Economic Department, Bank for International Settlements: paul.van-den-bergh@bis.org, +41 61 280 8432.

[2] Experience with emerging market debt crises prompted the development of the BIS consolidated banking statistics. After the Asian financial crises recommendations were made to improve balance-of-payment statistics and to develop financial soundness indicators. Various episodes of tension in commercial paper markets in major financial centres have resulted in the collection of comprehensive data on these instruments.

[3] An important data provider in this context is Markit, which produces an index for subprime mortgages (ABX), commercial mortgages (CMBX), CDS for European (iTraxx) and US (CDX) companies.

Measures of the overall size and key segments of securities markets

The turmoil originated in the market for securitised sub-prime mortgages in the United States but quickly expanded to other markets. Comprehensive official statistics on securities issuance and holdings proved difficult to come by, even in the case of the most developed financial centres. Official data sources were available for particular segments, such as the commercial paper market in the US and euro area.[4] Data on specific instruments (eg mortgage-backed securities, CDO's) could be obtained from market participants as well as from commercial data providers. Even so, it was very difficult, if not impossible, to track to what extent asset-backed securities were included in the asset pool underlying the issuance of CDO's and how the latter were again included in the pools underlying asset-backed commercial paper (the issue was even more complex for securitised products referring to actively managed pools of assets). The treatment of securitisation will be one of the major challenges in the development of a handbook for securities statistics, a joint project that has recently been initiated by the BIS, ECB and IMF.

Estimates of the size and key characteristics of special purpose entities

One reason why it was difficult to distil useful statistics even from large securities-by-securities databases resulted from the fact that in recent years a number of securitised instruments had been issued through special conduits, special investment vehicles (SIV's) and other special purpose vehicles. Little information was available publicly on the size and key characteristics of these entities, many of which had a formal or informal relationship with banks.

Relevant data to monitor developments in housing finance markets

Perhaps fortunately for data compilers and analysts, the problems related to housing and housing finance markets have affected first and foremost the United States, where data on these markets are relatively detailed and easily available from a wide range of sources. The table in Annex 1 gives just a very short overview of the key variables that have been used to track developments in housing, from a real as well as financial perspective. In countries other than the US similar data are much more difficult to come by. In fact, for many countries it continues to be difficult to find a reliable official statistic for house prices. And where such indices are available there is a wide range of methodologies and sources used to compile them so that their international comparability is not always straightforward (an initiative to develop a manual for residential property prices has only recently been taken by Eurostat under the auspices of the Inter-Secretariat Working Group on Price Statistics).

Impact of the method of calculating output of financial services

The measurement of output (value added) from financial services in the system of national account is particularly challenging. In most cases the financial intermediation services are indirectly measured (FISIM) using the difference between a reference rate (typically a risk-

[4] Data on asset-backed commercial paper were more difficult to find for the euro area.

free rate such as that for Treasury certificates or and interbank rate) and a representative bank lending and deposit rate. This method could have had an unexpected effect on measures of output during the turmoil. As underlying spreads were rising, indirectly measured output from financial intermediation would have been rising whilst banks were, at the same time, posting record losses, restructuring or even defaulting. It is not clear to what extent these factors affected published GDP measures in different countries.

Provisioning and loss data disclosed by individual institutions

With the introduction in recent years of International Accounting Standards, International Financial Reporting Standards, disclosure requirements issues by supervisors and web-based technology, it could have been expected that it would be relatively straightforward to collect information on the impact that the turmoil had on key elements of the balance sheets of financial institutions. Once the severity of the turmoil became clear, there was a keen interest by policymakers and market analysts to collect disclosed accounting data on provisioning and losses by banks and other financial institutions, as well as any quantitative information on risk exposures such as value-at-risk. This proved much more cumbersome than some might have expected. Relevant information disclosed in public statements proved difficult to compare and was mostly available in commentaries (often footnotes) rather than standardised elements in electronic templates of balance sheets that could be easily downloaded and tracked over time.[5] One commercial data provider developed a rather comprehensive database on bank writedowns and capital raising, but the data are only available on-screen and are neither printable nor downloadable.

OTC derivatives, including CDS

New derivative instruments, in particular credit default swaps (CDS), are increasingly being used to transfer credit risk between different participants in the financial system. Though aggregate statistics exist for OTC/CDS derivatives, various potential shortcomings have been identified in this area in terms of frequency and timeliness; instrument, counterparty, currency and residency breakdown; measures of net exposures after taking account of netting and collateral; and country coverage.[6] It is also difficult to compare or combine relevant data between OTC and exchange-traded markets. Data from clearing and settlement systems for the respective markets could possibly be mined further.

---

[5] The Financial Stability Forum has proposed a disclosure template for progress in implementing it has been slow.

[6] The BIS OTC derivative statistics are produced only semi-annually based on reporting from major dealers in 11 major centres (which are estimated to cover around 90% of global transactions). They have (limited) breakdowns for counterparties and instruments and cover gross notional amounts, gross market values as well as gross credit exposures (ie gross market values after taking account legally enforceable bilateral netting agreements).

Data on central bank money market operations and central bank balance sheets

In response to the market turmoil central banks have adapted their money market operations, for instance in terms of type of operation, maturity of operation and accepted underlying collateral. In some cases, new financing facilities have been introduced. Much information is published by central banks on their operations and their impact is, over time, reflected in central bank balance sheets. It has been difficult to find comparable time series data to allow a comparison of operations in different countries (eg maximum and marginal rates, bid-to-cover ratios and allotment structures in auctions).

The calculation of representative money market interest rates

Interbank money market rates are a key variable for central banks. As the turmoil evolved questions came to be posed about the representativness of key benchmark rates, including LIBOR published by the British Bankers Association. It was unclear how much the calculation of market benchmarks was based on rates that accurately reflected borrowing and lending conditions in interbank markets. Improvements have been suggested and in some cases new benchmark rates have been developed. It should be noted that, apart from the harmonised methodology introduced by the ECB for the euro area, there are no standards for the calculation of representative interest rates. As in the case of other key benchmark prices for financial variables, such as stock indices and bond yields, there are sometimes significant, differences between countries.

Measures of the developments in interbank markets

The focus of attention during the turmoil has been on the interbank money markets. IT has been very difficult to document statistically the reported reduction in trading volumes in these markets. Amounts outstanding of interbank claims and liabilities are not part of monetary statistics and even official banking statistics do not always provide this information. The exception has been the BIS international banking statistics, which separately identify interbank positions. Even where data are available little quantitative information has been available on the maturity distribution of interbank positions (eg to document to reported shortening of maturities during the turmoil) or on separate developments in collateralised and uncollateralised money markets.

The usefulness of turnover data from payment and settlement systems

Turnover data (value and volumes) exist for a number of payment and settlement systems both from national sources and from publications by the BIS-based Committee on Payment and Settlement Systems. In principle such data is available at high frequency (ie daily). It has been used to evaluate how individual systems have coped with operational pressures, if any, during the turmoil. But the data could also be used, in principle, to monitor indirectly transactions volume in money, foreign exchange, securities and exchange-traded derivative markets. Moreover, detailed transactions data can be mined to study trading patters in particular markets, for instance with respect to the selection of counterparties. In a few cases such type of information is used to calculate indices of financial stress.

Regular and ad hoc information from bank lending surveys

An important question during the financial turmoil has been how changing monetary and financial conditions would affect bank lending. In this context the information collected through regular surveys of bank lending conditions by a number of central banks received increasing attention. In at least one case the survey was brought forward and in some cases specific questions were added to assess specific situations. Some specific questions about evolving credit conditions were also added to surveys of businesses and/or households which some central banks also carry out regularly. A particular challenge has been to reconcile the information obtained through bank lending surveys with actual bank credit data compiled in the money and banking statistics.[7]

Regular and ad hoc information from consumer and business sentiment surveys

Irrespective of whether they conduct the surveys themselves, central banks, like market analysts, have monitored closely the results from regular consumer and business sentiment surveys. In many cases these are seen to leading indicators of economic developments (eg production, consumption, investment). Of particular interest has been the evolution of inflation expectations. Questions are sometimes raised about the methods used to translate qualitative information from such surveys (which typically ask respondents whether they expect an increase, decrease or no change in a particular variable) into quantitative indicators.

Measures of the size and characteristics of institutional investors

Prior to the outbreak of the turmoil concerns had been raised about the lack of appropriate, internationally comparable data on institutional investors, including pension funds, insurance companies, and investment/asset-management companies. Users and compilers had started to address the question as to whether how limited data on these non-bank financial sectors could be improved. Discussions had also been initiated on obtaining data on hedge funds.[8] Whilst attention during the turmoil was mainly focused on “banks”, institutional investors continued to be important actors. Other classes of institutions may have to be included in this category, such as private equity firms. Finally, data on sovereign wealth funds are also becoming important, as these institutions are becoming significant players in global financial markets.

---

[7] In some countries bank lending surveys indicated a significant tightening in conditions for bank lending to corporations and households, which were not reflected in subsequent declines in actual credit to these sectors reported in money and banking statistics. It was unclear to what extent this was the result of the reintermediation of credit flows through the banking system.

[8] Apart from the interest in the overall size and composition of hedge fund portfolio’s a particular issue has been to get a sense of bank lending to these institutions (and the potential disorderly unwinding of such exposures).

Making operational a number of new concepts

In recent years efforts have been made by researchers and analysts to develop operational measures for concepts such as market liquidity, leverage/gearing, risk appetite/aversion, and even financial stability. New indicators have been explained and included in central bank publications, including Financial Stability Reports. The period of turmoil has served as a test case for the usefulness of such measures, in particular to determine to what extent they are leading, concurrent or lagging indicators.

This is, of course, just a selection of the data issues and challenges that central banks may have faced in trying to monitor economic and financial developments during the recent period of turmoil. It has not only been a challenge for many to compile and interpret data on new elements of the financial systems such as securitisation, housing finance or derivatives. It has also been a challenge to use or improve data from existing statistical frameworks and compilation exercises. It would probably be useful for central banks, not only those from major financial centres where the turmoil has been most pronounced, to take stock of these issues and draw lessons from the way they have been, or have tried to be, addressed in different countries. Of particular interest, for instance, could be the need to improve securities market statistics as well as indicators of developments in housing markets.

Annex:
Examples of relevant indicators of housing markets and housing finance

House price index (with proper breakdowns by region, classes of property)

Appraisals vs market prices

New permits

Housing starts

Pending home sales

House sales (existing houses and new houses)

Vacancy rates (stock of unsold property)

Construction activity

Contribution of housing to GDP (nominal and real)

Loan to value ratios in mortgages (for new and existing mortgages)

Home equity withdrawals

Loan approvals

Mortgage loans (with proper breakdown between type of loans, risk category, first and second mortgages)

Arrears (on prime and non-prime mortgages)

Loan delinquencies/non-performing loans

Foreclosures

Mortgage-backed securities (with proper breakdowns)

Loan provisioning