A) Interlinkages and imbalances

1.1 Composite indicator of systemic stress (CISS)
- Since January 1999; weekly data
- Thomson Reuters, ECB, and ECB calculations
- The CISS comprises 15 raw, mainly market-based raw financial stress measures that are split equally into five categories, namely the financial intermediaries sector, money markets, equity markets, bond markets and foreign exchange markets. The raw stress indicators are homogenized by replacing each individual observation with its function value from the indicators' empirical cumulative distribution function. The five segment-specific sub-indicators of financial stresses are computed as averages of their three constituent transformed stress measures. The CISS aggregates the five sub-indicators based on portfolio theoretical principles, i.e. by taking into account the time-varying cross-correlations between the sub-indicators. The CISS thus places relatively more weight on situations in which stress prevails simultaneously in several market segments. It is unit-free and constrained to lie within the interval (0, 1). For further details on the calculations, see Boon S in Financial Stability Review, ECB, June 2013.

1.2 Probability of a simultaneous default by two or more large and complex banking groups
- Since January 2007; daily data
- Thomson Reuters and ECB calculations
- An estimate of the probability of a systemic event, i.e. a simultaneous default by two or more large and complex banking groups since January 2007; daily data Thomson Reuters and ECB calculations. An estimate of the probability of a systemic event, i.e. a simultaneous default by two or more large and complex banking groups. The indicator for Europe is based on the spreads of 12 sovereign credit default swaps (CDSs), namely those of Belgium, Germany, Ireland, Greece, Spain, France, Italy, the Netherlands, Austria, Portugal, Finland and the United Kingdom. The sub-sample 1 indicator is based on the CDS spreads of countries hit by the sovereign crisis (Ireland, Greece, Spain, Italy and Portugal), while the sub-sample 2 indicator is based on those of the remaining countries (Belgium, Germany, France, the Netherlands, Austria, Finland and the United Kingdom). All indicators are constructed from the first component extracted through principal component analysis (PCA). A specific level for Greece's default probability is assumed for the period in which Greek CDSs were not traded, i.e. the period between 4 March (credit event) and 11 April 2011.

1.3 Average contribution of individual institutions to overall systemic risk, using CoVaR (EU financial system)
- Since January 1999; daily data
- Bloomberg
- The indicator for Europe is based on the spreads of 12 sovereign credit default swaps (CDSs), namely those of Belgium, Germany, Ireland, Greece, Spain, France, Italy, the Netherlands, Austria, Portugal, Finland and the United Kingdom. The sub-sample 1 indicator is based on the CDS spreads of countries hit by the sovereign crisis (Ireland, Greece, Spain, Italy and Portugal), while the sub-sample 2 indicator is based on those of the remaining countries (Belgium, Germany, France, the Netherlands, Austria, Finland and the United Kingdom). All indicators are constructed from the first component extracted through principal component analysis (PCA). A specific level for Greece's default probability is assumed for the period in which Greek CDSs were not traded, i.e. the period between 4 March (credit event) and 11 April 2011.

1.4 Co-movements of sovereign credit default swap spreads
- Since 21 March 2008; daily data
- Markit
- The size of the bubbles corresponds to the share of total foreign claims (BIS data) in the total equity of a country's consolidated banking sector. The thickness of the arrows depends on the share of bilateral foreign claims (i.e. claims of banks in country A on banks and other borrowers in country B) in the total equity of the banking sector extending the loans. Arrows extend only from EU countries reporting consolidated banking statistics to the BIS (marked as lenders and borrowers, EU only) and only where the share of bilateral foreign claims in total equity is more than 75%. Data for foreign claims refer to all claims on an immediate borrower basis; for more details, see “Guidelines to the international consolidated banking statistics”, available at http://www.bis.org.

1.5 Cross-border claims of banks (international banking statistics)
- Quarterly and semi-annual
- BIS international banking statistics (quarterly) and ECB consolidated banking statistics (semi-annual)
- The indicator is based on the spreads of 12 sovereign credit default swaps (CDSs), namely those of Belgium, Germany, Ireland, Greece, Spain, France, Italy, the Netherlands, Austria, Portugal, Finland and the United Kingdom. The sub-sample 1 indicator is based on the CDS spreads of countries hit by the sovereign crisis (Ireland, Greece, Spain, Italy and Portugal), while the sub-sample 2 indicator is based on those of the remaining countries (Belgium, Germany, France, the Netherlands, Austria, Finland and the United Kingdom). All indicators are constructed from the first component extracted through principal component analysis (PCA). A specific level for Greece's default probability is assumed for the period in which Greek CDSs were not traded, i.e. the period between 4 March (credit event) and 11 April 2011.

B) Macro risk

2.1 Current and forecast real GDP growth
- Since 1995 for all EU countries; quarterly data
- European Commission
- Latest annual year-on-year, three-year historical average and Commission forecast for all 27 countries of the EU. The three-year historical average is the simple average of year-on-year growth rates over the last 12 quarters. Real GDP growth is calculated using seasonal and working-day adjusted data.

2.2 Domestic credit-to-GDP gap
- Since 1997 for some countries, and since 2004 for all EU countries; quarterly data
- European Commission, ECB and ECB calculations
- Calculated as the credit-to-GDP deviation ("gap"), which is calculated as the deviation of the ratio of domestic stocks of domestic credit to nominal GDP from its historical trend (see Alessi, L and Detken, C. “Qualitative and early warning indicators for credit supply boom/bust cycles: a role for global liquidity”, European Journal of Political Economy, Vol. 27, No. 3, June 2011). Domestic credit comprises monetary financial institution (MFI) loans to domestic non-MFIs (excluding general government) and MFIs holdings of securities other than shares issued by domestic non-MFIs (excluding general government). GDP is the four-quarter cumulated flow. Moreover, as from the December 2012 edition of the Risk Dashboard, data on outstanding amounts of domestic credit have been replaced with notional stocks of domestic credit (i.e. outstanding amounts corrected for effects not related to transactions).

2.3 Current account balance-to-GDP ratio
- Since 1999; quarterly data
- European Commission and ECB
- The indicator is calculated as the ratio of the current balance to GDP. It is updated on a monthly basis to an annual rate. The annual rate is used as a proxy for the structural current account balance.

2.4 General government debt-to-GDP ratio
- Since 1999; annual data
- European Commission and ECB
- The indicator is calculated as the ratio of the general government debt to GDP. The general government debt refers to the net debt position of central government and public corporations. The calculation is based on national definitions and reports from the Member States.

2.5 Current account deficit-to-GDP ratio
- Since 1996; quarterly data
- European Commission and ECB
- The indicator is calculated as the ratio of the current account deficit to GDP. The calculation is based on national definitions and reports from the Member States.

2.6 sovereign debt redemption rate
- Since 2006 for countries with available data; daily data
- Thomson Reuters Datamonitor and ECB calculations
- Redemption schedules refer to available debt securities only (issues are excluded; including debt issued in a currency other than the domestic one). Data on future debt redemptions for non-euro area Member States are converted into euro at the end of the redemption month, at the end of the month and at the end of the year. The redemption rate is the sum of the discount rate of all bonds issued by the central government divided by the total amount of bonds issued by the central government.

2.7 Non-marketable debt-to-GDP ratio
- Since 1996; annual data
- European Commission and OECD
- The indicator is calculated as the ratio of non-marketable debt to GDP. Non-marketable debt refers to the sum of the non-marketable debt of the government and the public corporations.

2.8 Economic sentiment indicator
- Since 1999 for some countries and since 2003 for all EU countries; monthly data
- European Commission
- The indicator is calculated as the ratio of the current account deficit to GDP. The calculation is based on national definitions and reports from the Member States.

2.9 Non-marketable debt-to-GDP ratio
- Since 1996; annual data
- European Commission and OECD
- The indicator is calculated as the ratio of non-marketable debt to GDP. Non-marketable debt refers to the sum of the non-marketable debt of the government and the public corporations.

2.10 Global Purchasing Managers' Index (PMI) manufacturing output and industrial production
- Since 2008; monthly data
- OECD, JPMorgan and Markit
- The indicator is calculated as the ratio of the current account deficit to GDP. The calculation is based on national definitions and reports from the Member States.

2.11 Global Purchasing Managers' Index (PMI) manufacturing output and industrial production
- Since 2008; monthly data
- OECD, JPMorgan and Markit
- The indicator is calculated as the ratio of the current account deficit to GDP. The calculation is based on national definitions and reports from the Member States.

2.12 Global Purchasing Managers' Index (PMI) manufacturing output and industrial production
- Since 2008; monthly data
- OECD, JPMorgan and Markit
- The indicator is calculated as the ratio of the current account deficit to GDP. The calculation is based on national definitions and reports from the Member States.

2.13 Non-marketable debt-to-GDP ratio
- Since 1999 for some countries and since 2004 for all EU countries; quarterly data
- ECB and European Commission
- The indicator is calculated as the ratio of non-marketable debt to GDP. Non-marketable debt refers to the sum of the non-marketable debt of the government and the public corporations.
**INDICATOR** | **DATE RANGE AND FREQUENCY** | **SOURCE** | **METHODOLOGY**
---|---|---|---
**C) Credit risk**
1.1 Residential property prices: a) estimates of the over/undervaluation of residential property prices in selected EU countries; and b) change in nominal residential property prices
| Revised data for 2007 only; quarterly data from the first quarter of 2012 | ECB and ECB calculations | The methodology applied for estimating the overvaluation/undervaluation of residential property prices is based on four different valuation methods: price-to-rent ratio, price-to-income ratio and two model-based valuation methods (see Box 3 in Financial Stability Review, ECB, June 2011, p. 53). Price indices data refer to total dwellings, whole country; national differences may however exist.

1.2 Foreign currency loans in the EU: a) share in total lending and annual growth rates; and b) foreign currency loans, broken down by domestic counterpart sector
| Varies across countries depending on the year of accession to the EU (between January 1999 and January 2007); monthly data | ECB | Loans extended by monetary financial institutions (MFIs), excluding the European System of Central Banks (ESCB), to domestic non-MFIs (excluding general government); share of foreign currency loans in total loans to domestic non-MFIs (x-axis) and annual growth rate of foreign currency loans to domestic non-MFIs (y-axis). In the breakdown, for each sector, its share of foreign currency loans to the different sectors of the economy is reported.

1.3 Yields on euro area non-financial corporate bonds, broken down by rating class
| Since 2000; daily data | Thomson Reuters Datastream | Merrill Lynch Bond Index for the euro area non-financial corporate sector; broken down by rating class (AAA and BBB).

1.4 Lending spreads of money market financial institutions – loans to non-financial corporations and households
| Since January 2003 for euro area; monthly data | ECB, Thomson Reuters, and ECB calculations | Lending spreads are calculated as the weighted average of the spreads for the relevant breakdowns of new business loans using the volumes as weights. The individual spreads are measured as the difference between monetary financial institutions' interest rates for new business loans and the swap rate with a maturity corresponding to the loan category's initial period of rate fixation. The lending spreads are broken down by euro area country and into non-financial corporations (NFCs) and households (H). The reference rates used are:

- for spreads for interest rates on loans with fixation periods of less than one year: six-month EURIBOR;
- for spreads for interest rates on loans with fixation periods of between one and five years: interest rate swap – Euro vs EURIBOR 3-year Interest Rate Swap;
- for spreads for interest rates on loans with fixation periods of between five and ten years (only used in the case of loans for house purchasing): interest rate swap – Euro vs EURIBOR 7-year Interest Rate Swap;
- for spreads for loans with fixation periods longer than five years: interest rate swap – Euro vs EURIBOR 10-year Interest Rate Swap.

1.5 Changes in credit standards for residential mortgage loans
| Since 2003 for euro area; quarterly data | ECB, Federal Reserve System and Bank of England | Weighted net percentage of banks contributing to the tightening of standards over the past three months.

1.6 Changes in credit standards for loans to large enterprises
| Since 2003 for euro area; quarterly data | ECB, Federal Reserve System and Bank of England | Weighted net percentage of banks contributing to the tightening of standards over the past three months.

**D) Funding and liquidity**

2.1 Interest rate spreads
| Since January 2000; daily data | Thomson Reuters | Difference between the overnight interbank rates and the overnight indexed swap (OIS) rates, for the euro area and the United States.

2.2 Financial market liquidity indicator for the euro area
| Since January 1999; daily data | Zet, Bank of England, Bloomberg, JPMorgan Chase & Co., Moody's KKV, and ECB calculations | This composite indicator is calculated by the ECB as an overall measure of liquidity, based on two components: money market liquidity risk and equity, bonds and foreign currency liquidity risk. The composite indicator comprises unweighted averages of individual liquidity measures, normalised over the period 1999-2006 for non-money market components. The data shown have been exponentially smoothed.

2.3 EURUSD cross-currency basis swap spreads
| Since January 2008; daily data | Bloomberg | The following shows the cost of swapping euro into US dollars with a one-year or three-month tenor. The lower the spread, the more expensive it is to swap euros into US dollars.

2.4 Loans-to-deposit ratio for a sample of large EU banking groups
| Since the first quarter of 2011; quarterly data | EBA | Data refer to group consolidated data. The indicator is based on a sample of 26 large EU banks and the data are subject to changes in the composition of the sample over time. Loans are computed from FINREP 1.1 – Total loans and advances (template rows: Loans and advances held for trading, designated at fair value through profit or loss, Available-for-sale (AFS), Loans and receivables, Held-to-maturity (HTM); deposits are based on FINREP 1.2 – Total deposits (other than from credit institutions) (template rows: Deposits held for trading, designated at fair value through profit or loss, measured at amortised cost).

2.5 Pattern of credit institutions’ liabilities: a) liabilities of euro area credit institutions, broken down by instrument; and b) liabilities of EU credit institutions by country – historical distribution of annual growth rates
| Since January 2004; monthly data | ECB | Chart A: total liabilities for the euro area credit institutions sector (i.e. monetary financial institutions (MFIs) excluding the European System of Central Banks (ESCB) and money market funds (MMFs)) total liabilities, unclassified and classified by instrument.

2.6 Share of central bank funding in credit institutions’ liabilities
| Varies across countries depending on the year of accession to the EU (between January 1999 and January 2007); monthly data | MF, ECB and ECB calculations | Liabilities of credit institutions (i.e. monetary financial institutions (MFIs) excluding the European System of Central Banks (ESCB) and money market funds (MMFs)) total liabilities, unclassified and classified by instrument. Contributions to instrument based on 12-month cumulated flows. Short-term deposits and debt securities issued refer to instruments with an original maturity below one year. Chart B: each box-plot displays the maximum, the first quartile, the median, the third quartile and the minimum of the annual growth rates of the credit institutions sector (i.e. MFIs excluding the European System of Central Banks (ESCB) and money market funds (MMFs)) total liabilities, excluding capital and reserves and remaining liabilities. The blue dots represent the last observation of each time series. For some countries the underlying data does not date back to January 2004 reflecting the availability of historical data.

2.7 Money markets and the Eurosystem’s standing facilities
| Since January 2007; weekly data | ECB and Bloomberg | The chart shows the evolution of the Eurosystem’s current account (excluding minimum reserves) and the marginal lending/deposit facility (for overnight borrowing/lending), and the volume of euro-denominated transactions in the interbank overnight market (ECOMAT volume).

2.8 Maturity profile of EU banks’ outstanding long-term debt
| Since 2005; monthly data | JPMorgan Chase & Co., Dealogic DCM Analytics and ECB calculations | Data refer to all amounts outstanding at the end of the corresponding period.Data cover long-term debt issued by corporate bonds, medium-term notes, covered bonds, asset-backed securities, and mortgage-backed securities with a minimum maturity of 12 months.
**INDICATOR METHODOLOGY**

5.1. The indicator is constructed as the first principal component of five currently available risk aversion indicators, namely CommBank Global Risk Perception, UBBS FX Risk Index, Westpac's Risk Appetite Index, BoM Risk Appetite Indicator and Credit Suisse Risk Appetite Index.

5.2. Equity indices: a) equity indices by market; b) equity indices by sector; c) implied volatility index: S&P 500 and EURO STOXX 50.

5.3. Price-earnings ratios of equity indices, by sector.

5.4. Short-term interest rates – implied volatility: 3 months - 1 year.

5.5. Long-term interest rates – implied volatility: 3 months - 10 years.

5.6. Exchange rate volatility.

6.1. Slope of the yield curve.

6.2.a. Return on equity.

6.2.b. Cost-to-income ratio.

6.2.c. Net interest income to total operating income.

6.3.a. Tier 1 capital to total assets excluding intangible assets.

6.3.b. Impaired loans and past due (<=90 days) loans to total loans.

6.4.a. Return on equity.


6.5.a. Solvency ratio – life insurance business.

6.5.b. Solvency ratio – non-life insurance business.

6.6. Retention ratio.