ANNEX I TO THE RISK DASHBOARD
INDICATORS METHODOLOGY
Last update: March 2013

INDICATOR | DATE RANGE AND FREQUENCY | SOURCE | METHODOLOGY
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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 harmonised by replacing each individual observation with its function value from the indicators' empirical cumulative distribution function. The five segment-specific sub-indicators of financial stress are compiled as averages of their time-varying 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-covariances between the sub-indicators. The CISS true values relatively more weight on situations in which stress propagates simultaneously in several market segments. It is unfiltered and2.0 Interlinkages and imbalances

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 within a period of one year, is made by the systemic risk measure (SRM). The SRM covers a sample of 15 banks. For further details on the indicator, see Box 8 in Financial Stability Review, ECB, June 2014.

1.3 Average contribution of individual institutions to overall systemic risk, based on CoVaR (EU financial system) | Since January 1999; daily data | Bloomberg | The CoVaR is based on the methodology proposed to Adrian and Brunnermeier (see Adrian, T. and Brunnermeier, M.K., “CoVaR: A measure of the expected loss to a large bank’s counterparty”, Federal Reserve Bank of New York Staff Reports, No 348, September 2011). The sample includes the (log) stock prices of 119 European financial institutions listed in the STOXX Europe 600 (52 banks, 33 financial service providers and 34 insurance companies). The average “systemic risk contribution” (Co) tends to be higher during crisis periods.

1.4 Co-movements of sovereign default swap spreads | Since 21 March 2006; daily data | Markit | The data of the sub-indicators constitute the share of the total foreign claims (BIS data) 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 (the BIS (mark) 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 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 time series for available sovereign credit default swap (CDS) data from the full sample include the (log) stock prices of 119 European financial institutions listed in the STOXX Europe 600 (52 banks, 33 financial service providers and 34 insurance companies). The average “systemic risk contribution” (Co) tends to be higher during crisis periods.

B) Macro risk

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

2.2 Domestic credit-to-GDP gap | Since 1997 for some countries, and since 2004 in 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 of Gross Domestic Product (GDP) (see Frenkel, H.-P. and Peszko, E. “Quantile time early warning indicators for credit risk assessment: a case 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 MFI 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 relating to transactions).

2.3 Current account balance-to-GDP ratio | Since 1999; quarterly data | European Commission and ECB | The average current account position is used as a proxy for the structural current account gap. The average annual balance on a current account basis for the last five years is calculated from the annualised ratio of the last 12 quarters.

2.4 Unemployment rate | Since 1999 for all EU countries; monthly data | European Commission | The long-term average is set to 100; the three-year historical average is the simple average of index levels over the last 12 quarters, and covers the most recent three-month period. The ‘short-term’ average is calculated from the annualised ratio of the last 12 quarters.

2.5 General government debt-to-GDP ratio | Since 1999; annual data | European Commission and ECB | The official debt-to-GDP ratios reported in the context of the excessive deficit procedure (EDP) were used as a source of data on government debt. The EDP allows the deduction of certain debt transactions (netted out). The general government’s gross debt-to-GDP ratio is calculated as the sum of government debt stocks of all Member States, excluding the debt of the euro area countries. Member States are calculated using nominal debt redemptions and GDP (the latter as forecast by the European Commission), both denominated in national currency.

2.6 Core inflation rate (EU Harmonised Index of Consumer Prices, HICP) | Since 1999; monthly data | Eurozone HICP, Eurostat | Time series for available sovereign credit default swap (CDSs); basis points, five-year maturity.

2.7 Sovereign debt redemptions | Redemptions for the forthcoming 12 months; monthly and quarterly data | ECB and EBC calculations | Redemption schedules refer to available debt securities only (defaults are excluded); including cash flows is from any other source. Data on future debt redemptions for countries whose HICPs are not converted into euro at the current rate of exchange are also included. The government debt-to-GDP ratios for noneuro area Member States are calculated using nominal debt redemptions and GDP (the latter as forecast by the European Commission), both denominated in national currency.

2.8 Sovereign debt redemptions | Since 1999; actual data | Eurozone HICP, Eurostat | Time series for available sovereign credit default swap (CDSs); basis points, five-year maturity.

2.9 Non-financial corporations' debt-to-GDP ratio | Since 1999 for some countries and since 2004 for all EU countries; quarterly data | ECB and European Commission | 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 (the BIS (mark) 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 claims on an immediate borrower basis; for more details, see “Guidelines to the international consolidated banking statistics”, available at http://www.bis.org.

2.10 Economic sentiment indicator | Since 1991 for some countries and since 2003 for all EU countries; monthly data | European Commission and European Commission | The Economic Sentiment Indicator (ESI) is an unweighted average of about 100 index values based on this survey. Each indicator represents the change in the most recent three-month period is expressed in percentage points, in comparison with the previous three-month period.
### Indicators Methodology

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<td>Chart A: total liabilities for the euro area credit institutions sector (i.e. monetary financial institutions (MFIs) excluding the Europese and money market funds (MMFs)), excluding capital and reserves and remaining liabilities. Contributions by instrument based on 12-month cumulated flows. Short-term deposits and debt securities issues 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 Europese and 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.</td>
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<td>Share of central bank funding in credit institutions' liabilities</td>
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<td>Maturity profile of EU banks' outstanding long-term debt</td>
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</table>
E) Market risk

The indicator is constructed as the first principal component of five currently available risk aversion indicators, namely Commerzbank Global Risk Perception, UBS FX Risk Index, Westpac’s Risk Appetite Index, BofA Merrill Risk Appetite Indicator and Credit Suisse Risk Appetite Index.

1.1 Market risk

The equity indices displayed are S&P 500, TOPIX, EURO STOXX 50, FTSE 100, Sensex Market Index, EU Banks Balkan Index, EU Insurance Balkan Index, EU Building Materials and Fixtures Datastream Index and EU Diversified Industrials Datastream Index. Volatility is implied by at-the-money options observed in the market. The Chicago Board Options Exchange Volatility Index (CBOT VIX Index) reflects a market estimate of future volatility of a basket of selected exchange traded options on U.S. Equity Index futures. Since January 1999; daily data Bloomberg and Thomson Reuters

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

The indicator is constructed from 5 currently available risk aversion indicators, namely Commerzbank Global Risk Perception, UBS FX Risk Index, Westpac’s Risk Appetite Index, BofA Merrill Risk Appetite Indicator and Credit Suisse Risk Appetite Index.

1.3 Price-earnings ratios of equity indices, by sector

The indicators reflect the volatility of short-term interest rates implied by at-the-money swaptions prices observed in the market.

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

The indicators reflect the volatility of long-term interest rates implied by at-the-money swaptions prices observed in the market.

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

The indicators reflect the volatility of long-term interest rates implied by at-the-money swaptions prices observed in the market.

1.6 Exchange rate volatility

The indicators reflect the volatility of foreign currency interest rates implied by at-the-money option prices observed in the market for the major currencies, based on a three-month interval.

F) Profitability and solvency

The slope of the yield curve is calculated as the difference between the ten-year spot rate and the one-year spot rate. The higher the difference, the steeper the yield curve.

6.1 Slope of the yield curve

The indicators are based on the data available for a sample of 25 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The solvency ratio is defined as the available solvency capital divided by the required solvency capital for life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.

6.5.a Solvency ratio – life insurance business

The indicators are based on the data available for a sample of 25 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The solvency ratio is defined as the available solvency capital divided by the required solvency capital for non-life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.

6.5.b Solvency ratio – non-life insurance business

The indicators are based on the data available for a sample of 25 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The solvency ratio is defined as the available solvency capital divided by the required solvency capital for non-life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.

The indicators are based on the data available for a sample of 25 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The solvency ratio is defined as the available solvency capital divided by the required solvency capital for non-life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.

6.6 Retention ratio

The indicators are based on the data available for a sample of 25 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The solvency ratio is defined as the available solvency capital divided by the required solvency capital for non-life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.