ANNEX I TO THE RISK DASHBOARD
INDICATORS METHODOLOGY

Last update: March 2013

EUROPEAN CENTRAL BANK
EUROSYSTEM

ESRB
European Systemic Risk Board
European System of Financial Supervision

	INDICATOR	DATE RANGE AND FREQUENCY	SOURCE	METHODOLOGY
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 homogenised by replacing each individual observation with its function value from the indicators' empirical cumulative distribution function. The five segment-specific sub-indices of financial stress are computed as averages of their three constituent transformed stress measures. The CISS aggregates the five sub-indices based on portfolio theoretical principles, i.e. by taking into account the time-varying cross-correlations between the sub-indices. 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 see Hollo, D., Kremer, M. and Lo Duca, M., "CISS - A composite indicator of systemic stress in the financial system", Working Paper Series, No 1426, ECB, March 2012.
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, as measured 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 2012.
1.3	Average contribution of individual institutions to overall systemic risk, using CoVaR (EU financial system)	Since January 1999; daily data	Bloomberg	The indicator is based on the methodology proposed by Adrian and Brunnermeier (see Adrian, T. and Brunnermeier, M.K., "CoVaR", 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" (loss) tends to be higher during stress periods.
1.4	Co-movements of sovereign credit default swap spreads	Since 21 March 2006; daily data	Markit	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 9 March (credit event) and 11 April 2012.
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 size of the bubbles corresponds to the share of total foreign claims (BIS data) in the total equity (ECB 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 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 claims on an immediate borrower basis; for more details, see "Guidelines to the international consolidated banking statistics", available at http://www.bis.org.
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 simple 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 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 notional stocks of domestic credit to nominal GDP from its recursive Hodrick-Prescott trend (see Alessi, L. and Detken, C., "Quasi real time early warning indicators for costly asset price 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 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	Quarterly data represent the sum of the four quarters up to an including the quarter of reference. The three-year average is compiled on the basis of the annualised ratio of the last 12 quarters.
2.4	Unemployment rate	Since 1999 for all EU countries; monthly data	European Commission	The eight-year median of the unemployment rate is used as a proxy for the structural unemployment rate.
2.5	General government debt-to-GDP ratio	Since 1999; annual data	European Commission and ECB	The official debt (latest observations plus forecasts) reported in the context of the excessive deficit procedure (EDP) was used as a source of data on general government debt. Intra-general government transactions are consolidated (netted out). The dashed black line represents the threshold of 60% for the government debt-to-GDP ratio.
2.6	General government deficit-to-GDP ratio	Since 1999; annual data	European Commission and ECB	Latest observations plus forecasts for one year ahead. 3% is the threshold for budget deficit under the Stability and Growth Pact.
2.7	Credit default swap premia on sovereign debt in selected EU countries	Since 2008 for countries with available data; daily data	Thomson Reuters Datastream and (	Time series for available sovereign credit default swaps (CDSs), basis points, five-year maturity.
2.8	Sovereign debt redemptions	Redemptions for the forthcoming 12 months; monthly and quarterly data	ECB and ECB calculations	Redemption schedules refer to tradable debt securities only (loans 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 cut-off date's exchange rate. Ratios to GDP for non-euro area Member States are calculated using nominal debt redemptions and GDP (the latter as forecast by the European Commission), both denominated in national currency.
2.9	Households' debt-to-gross disposable income ratio	From 1999; annual data	ECB and European Commission	Gross disposable income adjusted for the change in net equity of households in pension fund reserves. Data for Malta are not available.
2.10	Economic sentiment indicator	Since 1991 for some countries and since 2003 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 full economic cycle. The indicator comprises the indicators for industrial confidence (weight 40%), service confidence (weight 30%), consumer confidence (weight 20%), construction confidence (weight 5%) and retail confidence (weight 5%).
2.11	Global Purchasing Managers' Index (PMI) manufacturing output and industrial production	Since 2008; monthly data	OECD, JPMorgan and Markit	JPMorgan Global Manufacturing PMI output index, compiled by Markit, with a base (neutral) level of 50; values above (below) 50 indicate an increase (decrease) in economic activity. The change in global industrial production over the most recent three-month period is expressed in percentage points, in comparison with the previous three-month period.
2.12	Gold and Brent crude oil prices	Since January 2005; daily data	Bloomberg	Spot prices for oil and future prices for gold.
2.13	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	Stock of non-financial corporations' debt in each EU Member State.

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C) Credit risk				
3.1	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	Annual data for 2007 only; quarterly data from the first quarter of 2012	ECB and ECB calculations	The methodology applied for estimating the over/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.
3.2	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 (y-axis) and annual growth rate of foreign currency loans to domestic non-MFIs (x-axis). In the breakdown, for each sector, its share of foreign currency loans to the different sectors of the economy is reported.
3.3	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).
3.4	Lending spreads of monetary 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 (NFC) and households (HH). The reference rates used are: - for spreads for interest rates on loans with fixation periods of less than one year: 6-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.
3.5	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.
3.6	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				
4.1	Interbank 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.
4.2	Financial market liquidity indicator for the euro area	Since January 1999; daily data	ECB, Bank of England, Bloomberg, JPMorgan Chase & Co., Moody's KMV, 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.
4.3	EUR/USD cross-currency basis swap spreads	Since January 2008; daily data	Bloomberg	The indicators show 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 euro into US dollars.
4.4	Loan-to-deposit ratio for a sample of large EU banking groups	Since the first quarter of 2011; quarterly data	EBA	Data refers to group consolidated data. The indicator is based on a sample of 36 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 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).
4.5	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 Eurosystem 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 third quartile, the median, the first quartile and the minimum of the annual growth rates of the credit institutions sector (i.e. MFIs excluding the Eurosystem 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.
4.6	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	IMF, 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) vis-à-vis the Eurosystem (for euro area countries) or the national central bank (for other EU countries) as a share of the sector's total liabilities (excluding capital and reserves and remaining liabilities). ESCB funding comprises loans to other MFIs and excludes holdings of securities other than shares issued by other MFIs.
4.7	Money markets and the Eurosystem's standing facilities	Since January 2007; weekly data	ECB and Bloomberg	The chart shows the evolution of the Eurosystem current account (including minimum reserves) and the marginal lending/deposit facility (for overnight lending/deposits), and the volume of euro-denominated transactions in the interbank overnight market (EONIA volume).
4.8	Maturity profile of EU banks' outstanding long-term debt	Since 2005; monthly data	Dealogic DCM Analytics and ECB calculations	Data refer to all amounts outstanding at the end of the corresponding year/month. Banks' long-term debt includes corporate bonds, medium-term notes, covered bonds, asset-backed securities, and mortgage-backed securities with a minimum maturity of 12 months.

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E) Market risk				
5.1	Since January 1999; daily data	Since January 1999; daily data	Bloomberg, Bank of America Merrill Lynch, UBS, Commerzbank, and ECB calculations	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, BoA ML Risk Aversion Indicator and Credit Suisse Risk Appetite Index.
5.2	Equity indices: a) equity indices by market; b) equity indices by sector; and c) equity implied volatility indices: S&P 500 and EURO STOXX 50	Since January 1999; daily data	Bloomberg and Thomson Reuters	The equity indices displayed are S&P 500, TOPIX, EURO STOXX 50, FTSE 100, Swiss Market Index, EU Banks Datastream Index, EU Insurance Datastream 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 (CBOE VIX Index) reflects a market estimate of future volatility, based on the weighted average of the implied volatilities for a wide range of strikes. First and second month expirations are used until eight days from expiration, then the second and third are used. The VSTOXX Index is based on a new methodology jointly developed by Deutsche Börse and Goldman Sachs to measure volatility in the euro area. VSTOXX is based on the EURO STOXX 50 Index options traded on Eurex. It measures implied volatility on options across all maturities.
5.3	Price/earnings ratios of equity indices, by sector	Since January 1999; daily data	Thomson Reuters Datastream	The indices used are: EU non-financial corporations; Price-Earnings Ratio, EU main index; Price-Earnings Ratio, EU banking sector; Price-Earnings Ratio, EU insurance sector; Price-Earnings Ratio.
5.4	Short-term interest rates – implied volatility: 3 months - 1 year	Since January 1999; daily data	Bloomberg	The indicators reflect the volatility of short-term interest rates implied by at-the-money swaptions prices observed in the market.
5.5	Long-term interest rates – implied volatility: 3 months - 10 years	Since January 1999; daily data	Bloomberg	The indicators reflect the volatility of long-term interest rates implied by at-the-money swaptions prices observed in the market.
5.6	Exchange rate volatility	Since January 1999; daily data	Bloomberg	The indicators reflect the volatility of foreign currency interest rates implied by at-the-money options prices observed in the market for the major currencies, based on a three-month maturity.
F) Profitability and solvency				
6.1	Slope of the yield curve	Since January 2006; daily data	ECB, Bank for International Settlements, Bank of England and the Federal Reserve System	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. The yield curves for the United States, Switzerland and the euro area are estimated using the Svensson model. The UK curve is estimated using the variable roughness penalty model.
Sample of large EU banking groups				
6.2.a	Return on equity	Since the first quarter of 2011; quarterly data	EBA	Data refer to group consolidated data. The indicator is based on a sample of 36 large EU banks and the data are subject to changes in the composition of the sample over time. The indicator is based on the net income from FINREP 2 (total profit or loss after tax and discontinued operations) and on the total equity from FINREP 1.3. Quarterly flows are annualised.
6.2.b	Cost-to-income ratio	Since the first quarter of 2011; quarterly data	EBA	Data refer to group consolidated data. The indicator is based on a sample of 36 large EU banks and the data are subject to changes in the composition of the sample over time. The indicator is based on the costs as defined in FINREP 2 (template rows: Administration costs; Depreciation) and in the total operating income as defined in FINREP 2 (Total operating income: rows: Interest income; Interest expenses; Expenses on share capital repayable on demand; Dividend income; Fee and commission income; Fee and commission expenses; Realised gains (losses) on financial assets and liabilities not measured at fair value through profit or loss, net; Gains (losses) on financial assets and liabilities held for trading, net; Gains (losses) on financial assets and liabilities designated at fair value through profit or loss, net; Gains (losses) from hedge accounting, net; Exchange differences, net; Gains (losses) on derecognition of assets other than held for sale, net; Other operating income; Other operating expenses). Quarterly data refer to cumulative flows over the corresponding year.
6.2.c	Net interest income to total operating income	Since the first quarter of 2011; quarterly data	EBA	Data refer to group consolidated data. The indicator is based on a sample of 36 large EU banks and the data are subject to changes in the composition of the sample over time. Net income as defined in FINREP 2 (template rows: Interest income; Interest expenses) and total operation income as above. Quarterly data refer to cumulative flows over the corresponding year.
6.3.a	Tier 1 capital to total assets excluding intangible assets	Since the first quarter of 2011; quarterly data	EBA	Data refer to group consolidated data. The indicator is based on a sample of 36 large EU banks and the data are subject to changes in the composition of the sample over time. Tier 1 capital is as defined in COREP template Capital Adequacy 1.1, and total assets excluding intangible assets as derived from FINREP 1.1.
6.3.b	Impaired loans and past due (>90 days) loans to total loans	Since the first quarter of 2011; quarterly data	EBA	Data refer to group consolidated data. The indicator is based on a sample of 36 large EU banks and the data are subject to changes in the composition of the sample over time. Impaired loans as derived from FINREP 7 and FINREP 30B (template row: Loans and advances, column: Net carrying amount of the impaired assets; row: Loan and advances, specific allowances for individually assessed financial assets and specific allowances for collectively assessed financial assets, column: Closing balance) and total loans as defined in FINREP 1.1. and FINREP 30B (Total loans advances (template rows: Loans and advances AFS, Loans and receivables, HTM), rows: loans and advances, specific allowances for individually assessed financial assets and specific allowances for collectively assessed financial assets, allowances for incurred but not reported losses on financial assets, column: Closing balance).
Sample of large EU insurance groups				
6.4.a	Return on equity	Since the second half of 2009; semi-annual data	EIOPA	The indicator is based on the data available for a sample of 27 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The return on equity is defined as the cumulated profit (loss) after tax and before dividends over the last four quarters, divided by the average available solvency capital over the last four quarters.
6.4.b	Combined ratio – non-life insurance business	Since the second half of 2009; semi-annual data	EIOPA	The indicator is 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 combined ratio is defined as net claims incurred and net operating expenses divided by net premiums earned. Semi-annual data refer to cumulative flows over the corresponding year.
6.4.c	Gross premiums written – life insurance business	Since the second half of 2009; semi-annual data	EIOPA	The indicator is 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 chart refers to the annual percentage change in the gross premiums written for life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.
6.4.d	Gross premiums written – non-life insurance business	Since the second half of 2009; semi-annual data	EIOPA	The indicator is 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 chart refers to the annual percentage change in the gross premiums written for non-life insurance business. Semi-annual data refer to cumulative flows over the corresponding year.
6.5.a	Solvency ratio – life insurance business	Since the second half of 2009; semi-annual data	EIOPA	The indicator is 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.
6.5.b	Solvency ratio – non-life insurance business	Since the second half of 2009; semi-annual data	EIOPA	The indicator is 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.
6.6	Retention ratio	Since the second half of 2009; semi-annual data	EIOPA	The indicator is based on the data available for a sample of 27 EU-headquartered insurance groups and is subject to changes in the composition of the sample over time. The retention ratio is defined as net premiums written divided by gross premiums written. Semi-annual data refer to cumulative flows over the corresponding year.