C COMPARING MACRO-PRUDENTIAL POLICY STANCES ACROSS COUNTRIES

Macro-prudential policy aims to secure the stability of the financial system. The global financial crisis has shown how linkages between countries play a significant role in transmitting financial shocks. It is therefore of interest to examine macro-prudential policy for a group of countries as a whole. The macro-prudential policy stance based on an analysis of a group of countries may differ from the policies resulting from an analysis of each country in isolation. This special feature examines how similar stand-alone macro-prudential policies would have been for a selected group of countries and compares the desired stand-alone policies to a policy derived from a portfolio analysis. The desired macro-prudential policy stances (tight, neutral or accommodating) are derived from a set of historical indicators intended to measure systemic risk, but which clearly need further refinement. The degree of similarity between the countries' policy stances varies over time. During some time periods it is quite high. Furthermore, the analysis shows that the desired macro-prudential policy stance derived from individual country data at times broadly corresponds to the policy stance derived from aggregated data for the portfolio. In Europe the increased focus on macro-prudential policy has led to the establishment of the European Systemic Risk Board (ESRB). The ESRB will have responsibility for EU-wide macro-prudential oversight and policy recommendation.

INTRODUCTION

In order to secure financial stability, it is important to evaluate how risks may increase or build up over time (the time dimension) and to be aware that some financial institutions and countries are more important than others in the financial system (the cross-sectional dimension or contagion dimension). The policies therefore aim to reduce the build-up of risk over time ("leaning against the wind") while paying particular attention to systemically important institutions.

National authorities are usually concerned with the domestic financial system. However, the global financial crisis has shown how strong the effects of interlinkages between countries can be in a crisis situation. It is therefore increasingly important to assess and secure the financial stability of global or regional financial systems, where a region consists of a portfolio of countries. Does the assessment of financial stability for a portfolio of countries differ from the assessment for a single country? A domestic financial stability analysis is usually based on an assessment of risk using indicators reflecting data aggregated at the country level (time dimension), and the degree of systemic importance of financial institutions is measured with respect to the country's financial system (cross-sectional dimension). This method of analysing financial stability may be extended to a portfolio of countries by aggregating data at the group level and by focusing on institutions and countries that are important at the aggregate level. Accordingly, macro-prudential policy could then be implemented with a view to securing financial stability for the whole group of countries. Macro-prudential policy based on country-level assessments may differ from the macro-prudential policy based on portfolio-wide assessments. A portfolio-wide policy would probably be the same for all countries, while policies developed at the country level may differ. The macro-prudential policy stance and the change in policy stances over time may therefore vary between countries. Furthermore, differences in policies and regulation may lead to regulatory arbitrage, i.e. where a choice is made to conduct business in more favourable jurisdictions.

FINANCIAL STABILITY INDICATORS

Indicators used to evaluate financial stability and systemic risk reflect the different events that may disrupt financial stability. Many central banks summarise their evaluation of financial stability in financial stability reports. These reports typically present the indicators that are used to form the opinion on financial stability.

In some instances financial stability indices are used to summarise the underlying data.[1]

Several types of indicators are relevant. Macroeconomic indicators measure developments in data compiled at the country level, such as growth in total credit, growth in country-wide house prices and unemployment rates. Data for financial institutions are often aggregated and consolidated to reflect developments in the financial sector's assets and earnings. Since the banking sector is so important in many countries, systemic risk is often tied to the possibility of large credit losses, funding risk or the workings of the payment system. Data from securities markets, such as developments in equity prices and bond spreads, are another important source of information. Analyses of developments in stock prices and credit spreads of systemically important institutions are often carried out in order to learn about the "market's view" of the institutions.

In order to show quantitatively how financial stability indicators develop for a group of countries, three "macro" indicators are computed for ten countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Spain and Portugal. The countries were chosen primarily owing to data availability. The indicators are private debt growth,[2] growth of the private debt-to-GDP ratio[3] and unemployment growth. A high debt growth and growth in debt-to-GDP may indicate that imbalances are building up and are thereby leading to an increased probability of future abrupt corrections. An increase in unemployment may lead to future losses in the mortgage market. The time series of indicators are transformed by removing the trend and normalising the observation by the standard deviation.[4] The median of the transformed variables is used as the country's financial stability indicator.[5] In a comprehensive financial stability analysis these indicators would not be used in isolation, since the interpretation of the indicators may depend on the current situation in the economy. Increased credit growth, for instance, may indicate increased activity in the economy which is a positive sign at the end of a recession. In the following analysis, however, higher values shown by indicators are assumed to be related to an increased risk of future financial instability.

The development in the countries' risk indicators measures how risks develop over time (the time dimension). Chart C.1 shows the median of the countries' risk indicators and the risk indicator based on aggregated portfolio data. The chart also shows a measure of dispersion between the country indicators, measured as the range between the 2 and 8 deciles of the indicators. These indicators are relatively stable with long periods of positive values indicating high risk (1988-90, 1996-2000 and 2005-08), or negative values indicating low risk (1991-95 and 2001-04). At times most of the countries have positive or negative values of the risk indices, indicating a high degree of synchronisation of risks to financial stability between the countries.

1 See, for instance, the description of a financial stress indicator for Canada in M. Illing and Y. Liu, "Measuring financial stress in a developed country: An application to Canada", *Journal of Financial Stability*, Vol. 2, Issue 3, 2006, pp. 243-265, and for the euro area in M. Blix Grimaldi, "Detecting and interpreting financial stress in the euro area", *ECB Working Paper Series,* No 1214, June 2010.

2 A wide definition of credit to the private sector is used. The debt is item 32d in the IMF's International Financial Statistics (IFS).

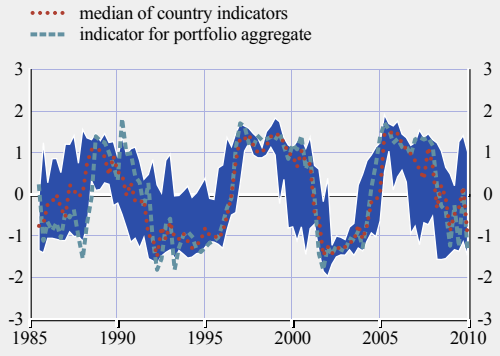
3 One example of a measure to reduce pro-cyclicality using the debt-to-GDP indicator is the counter-cyclical capital buffer (CCB) suggested by the Basel Committee on Banking Supervision (Basel Committee), see Basel Committee on Banking Supervision, "Countercyclical capital buffer proposal" Consultative Document, July 2010. The CCB is intended to come on top of the capital conservation buffer and will restrict payout of earnings (dividends) if capital is below the maximum buffer level. The Basel Committee suggests that the CCB is based on the difference between actual credit-to-GDP growth and trend credit-to-GDP growth. Growth above trend would imply a positive CCB and growth below trend would imply no buffer. Authorities will, however, use judgement and not apply the above or below-trend measure mechanically. The judgement may be based on variables other than credit-to-GDP growth.

4 The observation is the average growth over 12 quarters (three years). This average is used as the observation with a standard deviation based on eight quarters (two years) and the trend is the average of the observation for eight quarters. Other transformations involving, e.g. HP filters, may alternatively be used. Note that the observation is only based on historical data – it is not forward-looking.

5 The median of detrended and normalised financial stability indicators has been used to analyse time-varying capital surcharges for banks. See Bank of England, "The Role of Macroprudential Policy – Discussion Paper", November 2009. The purpose of the analysis was to show how such surcharges may be calibrated.

Chart C.1 Financial stability indicators

(Q3 1985 – Q1 2010; the shaded area reflects the range between the 2 and 8 deciles of the country-specific risk indicators)



Sources: ECB, Eurostat, IMF, OECD and ECB calculations.
Notes: The variables unemployment growth, debt growth and growth in the debt-to-GDP ratio are detrended and normalised by their respective standard deviations. The median of these three transformed variables is used as the financial stability indicator for, respectively, each country and the portfolio of countries.

At other times, however, the risks to financial stability seem to be less correlated. The correlation may therefore be time-dependent and will, of course, be linked to the characteristics of the countries in the portfolio.

Table C.1 shows the correlation coefficients between the median-transformed indicators for each country. Based on the entire time period, the correlation between the countries is mainly positive. Exceptions are a negative, but low, correlation between Germany and, respectively, Spain, Finland, France and the Netherlands. The correlation is also negative between Finland and Portugal. The correlation is highest – at about 0.7 – between France and Spain and between France and Italy. For many countries the coefficients are higher for the time period after 1995, suggesting that systemic risks as measured by the indicators have become more synchronised.

MACRO-PRUDENTIAL POLICY

Authorities may use a wide range of tools to ensure financial stability. While micro-prudential regulation aims to secure the sustainability of individual institutions, macro-prudential regulation aims to secure the sustainability of the financial system. The tools used in prudential regulation are usually capital regulation, liquidity regulation, or more direct measures such as loan-to-value (LTV) or loan-to-income (LTI) ratios.[6] The tools used for macro and micro-prudential regulation are often the same. What makes macro-prudential regulation different from micro-prudential regulation is primarily the purpose of the regulatory action.[7]

6 For a wider discussion of the tools, see ECB, "Macro-prudential policy objectives and tools", *Financial Stability Review*, June 2010.

7 See P. Clement, "The term 'macroprudential': origins and evolution", *BIS Quarterly Review*, March 2010. "The distinction between the micro and macro-prudential dimensions of financial stability is best drawn in terms of the objective of the tasks and the conception of the mechanisms influencing economic outcomes. It has less to do with the instruments used in the pursuit of those objectives."

Table C.1 Correlation coefficients between country indicators

(Q3 1985 – Q1 2010: lower left triangle; Q1 1996 – Q1 2010: upper right triangle)

	AT	BE	DE	ES	FI	FR	IE	IT	NL	PT
AT	1.0	0.4	0.4	0.4	0.1	0.3	0.5	0.2	0.4	0.3
BE	0.4	1.0	0.3	0.5	-0.2	0.5	0.5	0.5	0.2	0.5
DE	0.3	0.0	1.0	0.0	-0.1	0.0	0.0	0.1	0.3	0.3
ES	0.4	0.6	-0.2	1.0	0.2	0.6	0.8	0.6	0.3	0.4
FI	0.1	0.2	-0.2	0.4	1.0	0.1	0.1	0.0	0.0	-0.2
FR	0.3	0.6	-0.1	0.7	0.4	1.0	0.4	0.8	0.3	0.6
IE	0.3	0.3	0.0	0.5	0.2	0.4	1.0	0.4	0.2	0.2
IT	0.2	0.4	0.1	0.5	0.2	0.7	0.3	1.0	0.3	0.8
NL	0.1	0.2	-0.1	0.3	0.0	0.2	0.0	0.2	1.0	0.5
PT	0.1	0.1	0.4	0.1	-0.2	0.3	0.2	0.6	0.0	1.0

Sources: ECB, Eurostat, IMF, OECD and ECB calculations.
Notes: The variables unemployment growth, debt growth and growth in the debt-to-GDP ratio are detrended and normalised by their respective standard deviations. The median of these three transformed variables is used as the financial stability indicator for each country.

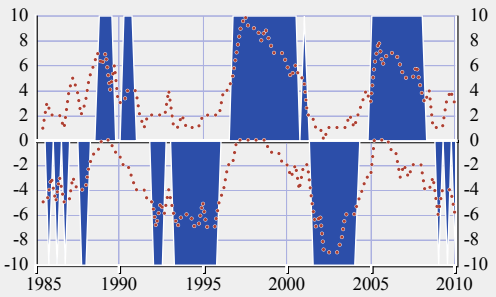
In this special feature, the derived indicators are used as measures of the desirable stance of macro-prudential policies. If the financial stability indicator is higher than level H the macro-prudential policy stance should be "tight"; if the transformed variable is below level L it should be "accommodating"; in between the levels H and L the policy stance should be "neutral". This rule is used to derive desired policy stances but does not provide guidance about which policy measures to use. It is simply a warning system and the actual threshold levels should, in theory, be based on an empirical analysis of thresholds that balance type I and type II errors in an optimal fashion. Chart C.1 showing the financial stability indicators gives an indication of the policy that would have followed from this rule. Threshold levels of 1 or -1 would have resulted in short periods with tight or accommodating policies and policy would have been mainly neutral. Threshold levels below 1 or above -1 will increase the period of time when the desired policy would either be tight or accommodating.

Chart C.2 shows the number of countries in the portfolio with a desired tight or accommodating policy stance since 1985 when H=0.8 and L=-0.8. The chart shows a cyclical pattern with periods when most countries had a desired tight policy stance (1989, 1997 and 2006), followed by periods when most countries had a desired accommodating policy (1993, 2002 and 2009). If the policy stance is derived from aggregated data for the portfolio,[8] Chart C.2 shows that the desired portfolio-wide policy stance after the 1980s depicted a similar pattern as the policy stances calculated at the country levels.

Even though Chart C.2 shows that the country indicators at times would have induced similar desired policy stances across countries, it is important to underline that a proper in-depth country-by-country assessment of financial stability could have given a different outcome. An in-depth analysis would have included additional financial stability indicators and an analysis of the underlying factors causing a high level of the risk indicators. As an example, consider the different factors that may cause strong credit growth. If high credit growth is caused by financial institutions competing for market share by lowering credit standards, increased credit growth will be of concern since it may lead to increased future credit losses. If, on the other hand, credit growth is caused by an adjustment to a higher level of credit in the economy due to more structural changes, such as a change in the tax treatment of interest expenses, the temporary high credit growth will be less of a concern.

Chart C.2 Number of countries with desired tight or accommodating policy stance

(Q3 1985 – Q1 2010; number of countries with desired tight (+) or accommodating (-) policy stance)



Sources: ECB, Eurostat, IMF, OECD and ECB calculations.
Notes: There are ten countries in the portfolio. The desired policy stance is tight (+) if the financial stability indicator is larger than 0.8 and accommodating (-) if it is below -0.8. The shaded area indicates whether the desired policy stance is tight or accommodating when the portfolio risk indicator is used to derive the portfolio policy stance.

CROSS-SECTIONAL DIMENSION

The difference between policies based on domestic assessments and policies based on portfolio assessments will depend on the financial stability indicators and on similarities between the countries in the portfolio. If the country-specific risks are synchronised between countries, then the desired macro-prudential policy stances derived from an indicator as described in this special feature will also be similar. The positive correlation of macro-prudential policies based on domestic assessments is here primarily a result of the time dimension of systemic risk. The cross-sectional

8 This means, for instance, that the debt-to-GDP ratio is computed as portfolio debt divided by portfolio GDP.

dimension in relation to other countries may, however, also be part of a domestic financial stability assessment. This will, for instance, be the case where instability in a country is amplified in later-round effects owing to contagion via other countries.

Financial institutions operating in several countries may be crucial for the financial system in each country. Distress in such institutions may therefore directly threaten the financial stability of several countries. Such institutions are therefore included in analyses of possible cross-country contagion. There are, however, several, more indirect channels of contagion. The interbank market may be analysed using network theory, and measures of network characteristics, such as centrality, may assist in assessing contagion risk.[9] Money and securities markets are another potential contagion channel. The presence of information asymmetry, where market participants are less informed about financial institutions' risk exposures and financial standing than management and authorities, may lead to sudden changes in market prices if it is perceived that events in one country may occur in others. This may cause temporary funding problems for financial institutions, even though their underlying economic situation is sound. Any measure of cross-sectional importance of financial institutions or countries is therefore likely to take several possible contagion channels into account.

Based on an analysis of the cross-sectional dimension, an indicator measuring contagion risk could be developed. As a first step, size, as measured by the country's debt level or the correlation coefficients from Table C.1, could be explored. Such an indicator could then be used to adjust the macro-prudential policy in each country. A country with a high value for the "contagion index" should follow a tighter policy than a country with a low value. In addition to influencing the calibration of policy measures, cross-sectional assessments may also influence the policy stance. One alternative is that the threshold level H, triggering a tight macro-prudential policy stance, could depend on both the financial stability indicator of the country and the contagion index, such that systemically important countries start to follow a tight policy earlier.

CONCLUDING REMARKS

The financial crisis has led to increased emphasis on macro-prudential regulation and oversight at the national level.[10] The financial crisis has also revealed the extent to which national financial systems are interlinked, thereby increasing the focus on the regional and global levels. It is therefore increasingly important to assess and secure financial stability by evaluating portfolios of countries – going beyond the country level. When financial instability is simultaneously present across countries, the macro-prudential policies are also likely to be positively correlated. However, similar macro-prudential policy stances do not mean that the portfolio aspect can be ignored. Increased cooperation, at the very least to assess the vulnerabilities related to cross-country contagion, is necessary to secure financial stability in financial systems comprising several nations.

In the EU, the ESRB will have responsibility for EU-wide macro-prudential oversight and policy recommendations. The macro-prudential perspective means that the ESRB must decide whether it is necessary to recommend measures for a country or group of countries in order to mitigate or prevent the build-up of risk in the EU. Such a recommendation will be based on an evaluation of the development of risk in individual countries or a group of countries, as well as of the consequences of financial instability in individual countries or groups of countries for other countries in the EU.

9 For an overview of network theory applied to financial stability analysis, see ECB, "Financial networks and financial stability", *Financial Stability Review*, June 2010.

10 The United States and the United Kingdom are examples of countries giving increased focus to system-wide surveillance and regulation. In the United States the structure of regulation has been reformed and a Financial Stability Oversight Council established with system-wide responsibilities. In the United Kingdom the structure of supervision is being reorganised and macro-prudential policy is suggested to be the responsibility of a new Financial Policy Committee of the Bank of England. See HM Treasury, "A new approach to financial regulation: judgement, focus and stability", July 2010.