
A macroprudential policy framework for the EU and its member states

Viral Acharya and Charles W. Calomiris
NYU Stern School of Business and CEPR; Columbia Business School

Macroprudential policies alter regulatory requirements of banks and institutions in response to changes in the macro economy and financial system. This chapter starts by discussing the various objectives of such macroprudential policies and suggests a framework for their application to the EU. The approach reconciles EU-wide financial integration and national frameworks. A great risk for European banking, however, is a potential mismatch between centralisation of protection and decentralisation of supervision.

What is macroprudential policy?

Microprudential policy varies capital requirements and other prudential tools in response to variation in the characteristics of individual banks, including, for example, perceived changes in their asset risk. Macroprudential policy alters regulatory requirements on banks and other financial institutions in response to observed changes related to the financial system as a whole, or to the macroeconomy.

Macroprudential policies can have multiple objectives. One objective is to ensure the resilience of the financial sector of the economy against large common shocks to financial institutions. When many financial institutions experience a large common shock (such as a severe recession, a secular housing price decline, or sovereign default), this can produce large common responses from financial firms (e.g. the liquidation of risky assets, the hoarding of liquidity, the contraction of supply of credit, and the

shutting down of risk-intolerant money markets, including the repo, Libor, Euribor, and commercial paper markets). These responses magnify the initial shock's consequences, potentially resulting in heightened financial distress for the financial sector and the whole economy, and a severe contraction in economic activity. Because individual risk choices can expose the entire financial system and the whole economy to systemic risk, individual firms' risk choices entail potential negative 'externalities'. One goal of macroprudential policy is to internalise those externalities by limiting systemic risk through the imposition of more demanding prudential standards in states of the world where the potential for systemic risk is relatively high (e.g. raising capital requirements during a possible real estate bubble).

A second objective is to control some aspect of the behaviour of the financial sector – for example, the supply of credit – as a means of influencing risk-taking or savings/investment decisions in the whole economy. For instance, rapid aggregate credit growth can be associated with a deterioration in the quality of underwriting, and may fuel unsustainable asset-price inflation and produce misallocations of investments. Containing aggregate credit growth may, therefore, stabilise and increase consumption, investment, and asset returns over time.

Finally, a third objective of macroprudential policy is to improve the safety and soundness of individual banks with respect to non-correlated shocks. Here, the purpose of macroprudential regulation is to correct aggregate common errors in the measurement of bank risk used by microprudential regulation. For example, if risk weights used by banks under the Basel rules tend to become too generous in some states of the world, increasing capital requirements in those circumstances can be justified as a corrective policy. Furthermore, these corrective macroprudential policies can prevent distortions in investment, especially during periods of economic booms, when the under-appreciation of risk in certain sectors, such as commercial real estate, may prompt overinvestment.

We note that these three objectives of macroprudential policy may conflict with short-term policy goals associated with maintaining growth in the economy. It is almost

never wise, however, to tolerate permissive underwriting standards and excessive risk-taking myopically in the interest of propping up short-term growth. By focusing on the medium- and long-term benefits of financial stability, macroprudential policy produces a lasting reduction in short-term economic volatility.

To what sort of information should macro-prudential policies respond, and how should they respond?

There are two broad categories of information that could be relevant for macroprudential policy, which we label “aggregate indicators”, and “financial network indicators”.

Aggregate indicators include the growth of stock market prices, the growth of house prices, the growth of total bank credit, the leverage of banks (evaluated using book values and market values), the leverage of non-financial corporations, the sectoral concentration of risk in lending, the implied volatility of non-financial stocks, the implied volatility of bank stocks, the size of haircuts applied to collateral in financial markets, term spreads or risk spreads in the bond markets, GDP growth rates, and growth rates of investment or of other components of GDP.

Financial network indicators measure the robustness of the financial system in dealing with a shock. Concentrations of counterparty risk at important ‘nodes’ in the financial network can indicate systemic vulnerability, even if aggregate indicators do not indicate any expansion of risk. Correlations in positions across important intermediaries can result in ‘cascade effects’ whereby significant losses produce widespread simultaneous selling pressure or illiquidity for more than one important institution.

Macroprudential policy can respond to aggregate indicators by establishing algorithms that translate changes in the indicators into changes in capital requirements, liquidity requirements, or other prudential policies. For example, under Basel III, changes in the ratio of credit to GDP are one of the key variables that will be employed to measure systemic vulnerability to credit booms. Work by Claudio Borio and Mathias Drehman (2008) has argued in favour of a dual threshold criterion whereby capital requirements

could respond to a sufficiently large combined change in the growth of credit and the growth of either stock prices or house prices. Others, like the Squam Lake Group, have suggested including leverage in the mix of aggregate indicators.

It is realistic to think that a rule could be established through which regulatory capital requirements and other requirements would vary in response to observed changes in some vector of aggregate measures, in a way that would be predictable and transparent. Transparency and predictability are desirable features of a rule for two reasons. First, they would ensure accountability of policymakers, who might otherwise face momentary political pressures not to apply a desirable rule. Second, by making policy predictable, the market will reinforce policy actions in ways that will make macroprudential policy more powerful. For example, assume that a credit-to-GDP trigger is about to be breached. Knowing that this will result in higher minimum capital ratio requirements, banks may begin to cool credit in expectation of those higher capital requirements, which would itself contribute to the desired stabilisation in credit growth.

At the same time, there can be costs to excessively rigid adherence to rules. Sometimes policymakers will have access to information that would justify a deviation from pre-announced rules. Adherence to rules can be made appropriately flexible by instituting a ‘comply or explain’ regime. Occasionally, when the need to deviate from the rule is sufficiently great, policymakers will do so and then explain in detail – and promptly – the information and the policy rationale that led them to fail to comply with the rule.

Financial network indicators are not as useful for purposes of ‘real-time’ counter-cyclical policy, for three reasons. First, correlations, counterparty positions, and other measures of network vulnerability are not reliable as real-time measures; they are subject to dramatic and sudden change. Second, the mapping from changes in such indicators to regulatory changes is hard to calibrate. Third, it would be almost impossible to construct a predictable and transparent rule to determine how measures of network vulnerability would translate into variation in capital requirements.

For these reasons, we believe that only aggregate indicators are suitable for use in real-time variation of regulatory requirements in response to cyclical variation in asset and credit markets. Financial network indicators should be used for other purposes. In particular, financial network indicators can be used as inputs to gauge the appropriate long-term levels of regulatory requirements, particularly with respect to systemically important financial institutions.

We propose that different regulatory or central bank tools should be applied to different purposes. This specialisation and division of responsibility would enhance accountability and transparency, and thus increase effectiveness.

- Interest rates set by monetary authorities should follow clear (not necessarily rigid) rules – like a Taylor Rule, a nominal GDP-targeting rule, or an inflation-targeting rule.
- Cyclical variation in macroprudential policy should respond predictably to a set of aggregate indicators.
- Periodic stress tests should re-calibrate long-term capital requirements and liquidity requirements in a manner that takes into account financial network effects and changes over time in asset risk. Note that current regulatory stress-test frameworks (both in the US and Europe) do not account for the network-related ‘second-round’ effects, though they do potentially account for changes over time in asset risk (through asset-specific loss estimates).
- We also endorse, as an additional regulatory tool, the use of additional asset- and liability-failsafe measures, such as timely revisions of sectoral weights (as was done in the UK recently for commercial real estate and in India for mortgages in 2006-07), and caps on loan-to-value (LTV) or debt-to-income (DTI) ratios. These would be applied to lines of business or specific subsidiaries to ensure adequacy of capital and liquidity from a bottom-up perspective, and thus reduce the reliance on overarching modelling of enterprise-wide risk, which is currently relied upon excessively (Acharya et al. 2011; Acharya and Oncu 2013).

To what extent should capital versus liquidity requirements be used as macroprudential tools, and how?

Basel III adds two new proposed liquidity requirements to the existing set of capital requirements. There are several flaws in the Basel conception of these requirements. Liquidity is defined far too broadly; it would be more appropriate to focus on cash requirements. Furthermore, requirements for cash and capital should recognise the substitutability of the two instruments for controlling risk. Finally, the Basel III conception of the motivation for liquidity requirements is too narrowly targeted towards limiting liquidity risk. In fact, both capital and liquid assets (especially cash held at the central bank) are essential tools for managing banks' default risk. As such, liquidity requirements have significant advantages over capital, and in general an optimal prudential regulatory system should combine capital and cash reserve requirements as prudential tools. Cash at the central bank is real, while book capital is an accounting fiction that is subject to manipulation by banks and their regulators. Furthermore, as Calomiris et al. (2014) show, significant required cash holdings raise the lower bound of the value of bank assets, which reduces banks' incentives to undertake excessive risk in the wake of losses (so-called 'resurrection risk-taking').

Over the cycle, capital requirements are a more effective tool for varying prudential requirements than cash requirements. Because of the favourable incentive consequences of maintaining cash requirements during recessions or times of slow growth, it is better to reduce capital requirements in low-growth states and raise them during high-growth states.

Furthermore, capital requirements should be redesigned to include the use of market information about bank stock or bond values, in addition to book values, in prudential regulation. The use of market information about bank stock and bond values would be useful for informing regulatory interventions and preventing the gross understatement of asset losses and overstatement of bank equity values. Some market participants may complain that market values may understate 'true value', but counterparty risk is a direct

consequence of market perceptions of value. Furthermore, governments may be forced to intervene in response to the collapse of market values. That means that regulators who are concerned about the collapse of interbank markets, or banks, must focus on market indicators of bank capital and risk. The role of the market value of capital could be particularly useful for macro-prudential regulation (see Box 1). Specifically, measures of bank leverage based on market values could be used as triggers to vary bank capital requirements, or as triggers in a new contingent capital (CoCo) requirement to prevent banks from becoming sources of systemic risk. Calomiris and Herring (2013) argue, for example, that establishing a CoCo requirement with a market-value trigger set at a high ratio could incentivise banks to voluntarily maintain high minimum ratios of capital and avoid situations like 2006-08, when banks were permitted to run down their true capital ratios with disastrous consequences.

Other examples from KMV's successful ratings of debts, both in the case of Enron of WorldCom, indicate that changes in market values of equity provide essential and timely indicators of changing financial circumstances. Finally, market-value of equity-based measures that capture downside aggregate risk or systemic risk of financial firms such as CoVaR (Adrian and Brunnermeier 2009) and Marginal Expected Shortfall and Capital Shortfall (Acharya et al. 2010, 2012) also may be promising to incorporate into stress tests.

Box 1 The usefulness of market equity ratios for identifying bank risk, April 2006-April 2010

For three sets of institutions – troubled European financial institutions, troubled US financial institutions, and non-troubled US financial institutions – we plot the backward-looking 90-day moving average of the ratio of the value of the market value of equity relative to the sum of the face value of debt plus the market value of equity. For the first two groups, the market equity ratio declined dramatically over the 18 months prior to the crisis of September 2008. For the third group,

equity ratios declined much less and remained high. Clearly, market perceptions of weakness were quite relevant for identifying relatively weak financial institutions during this period.

Figure 1a Troubled European financial institutions during the crisis

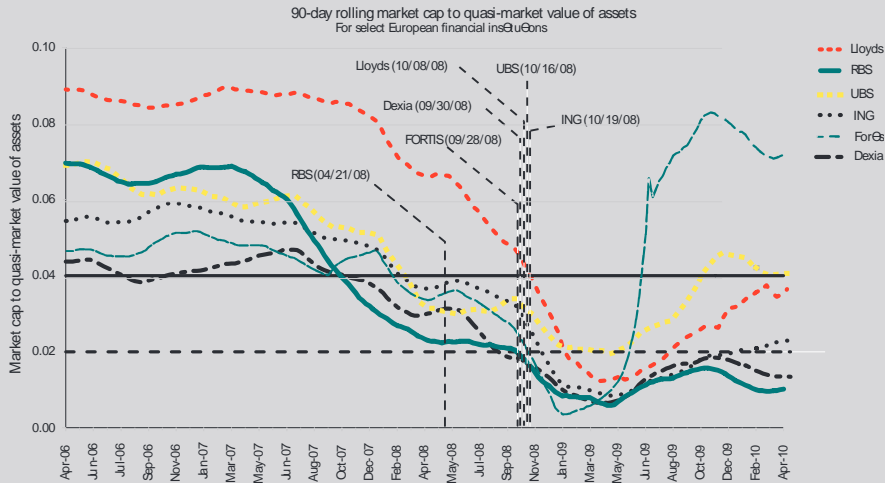
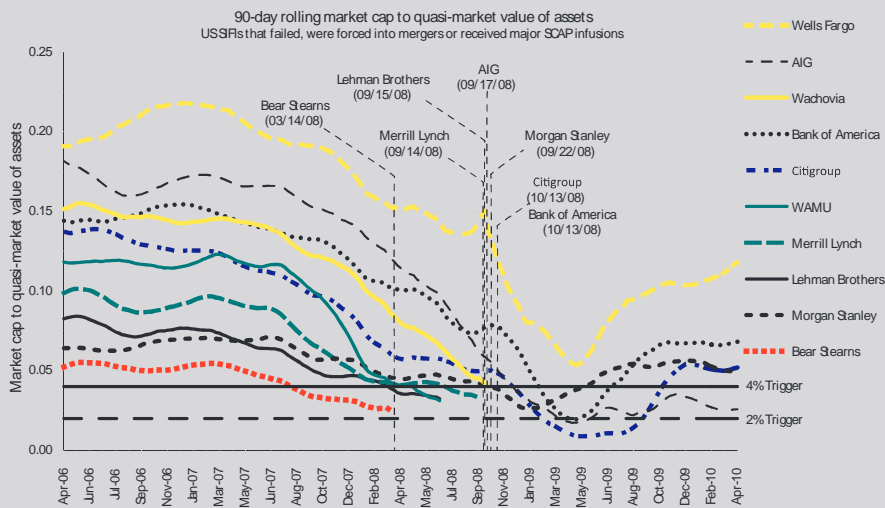
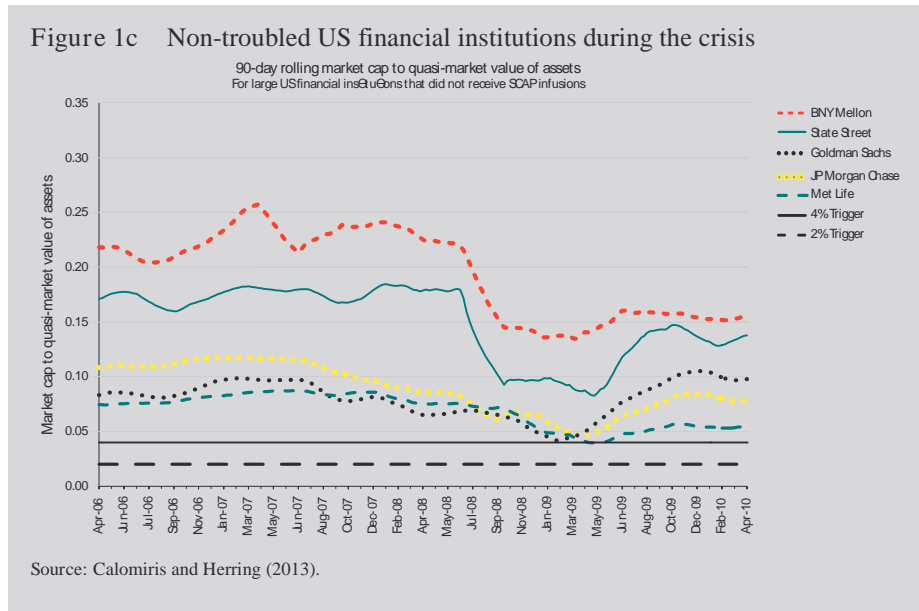


Figure 1b Troubled US financial institutions during the crisis





Applying this general framework to the EU

In Europe, the macroprudential policy framework operates on two levels. At the EU level, the European Systemic Risk Board (ESRB) has a legal responsibility for systemic oversight and the prevention and mitigation of systemic risks to the EU financial system, although it possesses neither macroprudential instruments nor the power to use other authorities' instruments. At the Eurozone level, the ECB has been granted new authority with respect to supervision and stress testing, but even here, that authority is shared with national regulators. There are two reasons why the responsibility for the adoption of the measures necessary to maintain financial stability – either upon the initiative of the national macroprudential authority or as follow-up to ESRB recommendations and warnings – remains largely national within Europe.

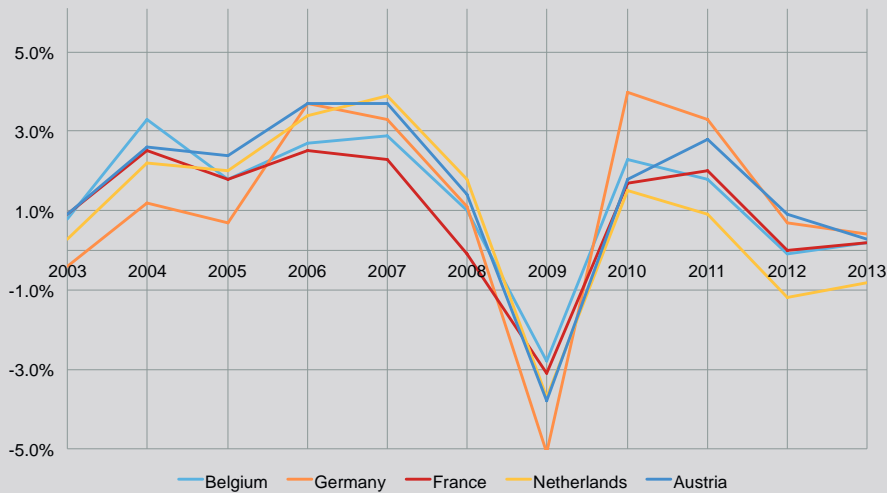
One reason is that the structural characteristics of economies and financial systems still differ greatly among EU countries in spite of EU financial integration, as the recent divergent growth experiences within Europe over the past decade illustrate (see Box 2). Thus it may make sense for different countries to operate somewhat distinct macro-

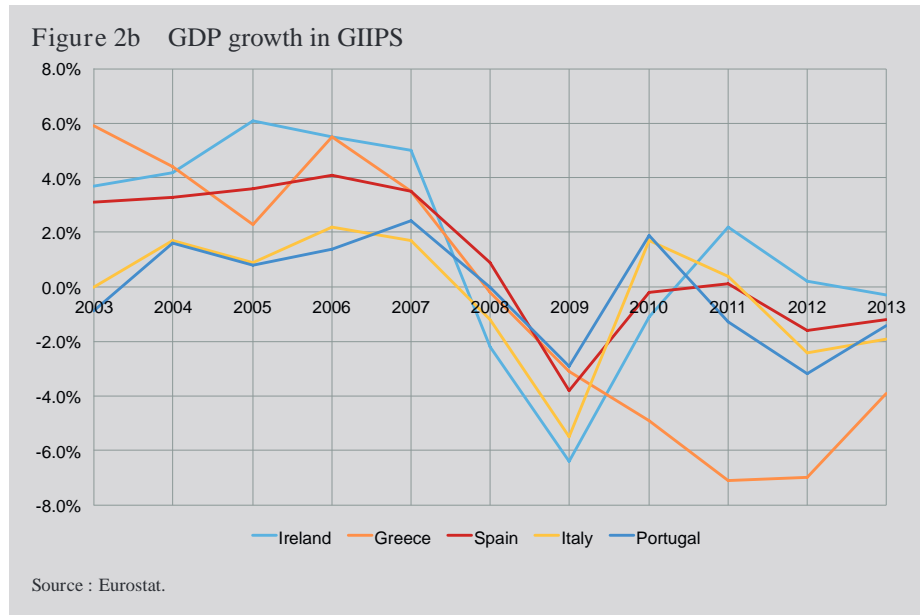
prudential policies to control the timing of aggregate credit expansion and contraction within their borders.

Box 2 Divergent growth within Europe

The figures below show the annual GDP growth in core Eurozone countries (Belgium, Germany, France, Netherlands and Austria) in panel a, and in the peripheral or GIIPS countries (Greece, Ireland, Italy, Spain and Portugal) in panel b, for the time period 2003 to 2013. As the figures show, core countries still exhibited mainly positive growth in 2008, while in 2009, GDP dropped significantly by -2.8% to -5.1%. From 2010, growth rates started recovering, albeit still being weak. In contrast, the downturn for the periphery states started earlier, with all but Spain already exhibiting negative growth rates by 2008. The drop in 2009 was slightly stronger than for the core countries. Since then, the periphery states with the exception of Ireland have failed to recover in their growth rates compared to the core states. In particular Greece reached markedly negative levels between 2010 and 2013. The figures underscore the economic divergence in the European countries since 2008.

Figure 2a GDP growth in core countries





The other reason is political influences that favour preserving national authority over the economy and financial sector resolution policy. Decisions to bailout banks or impose discipline on them have important national economic and political consequences. For example, financial crises typically have a substantial impact on public finances, the responsibility for which lies at the national level in the absence of an ‘EU taxpayer’.

However, the continuing decentralisation of regulatory authority, including macroprudential policymaking, entails significant risks. In particular, the recognition of losses in a predictable and transparent manner, and their allocation across the various national authorities or financial institutions, inherently requires coordination and agreement among national authorities. Postponing such agreement is a formula for producing chaotic resolution and failing to establish an incentive-compatible resolution policy.

This risk of negative externalities across countries when loss-sharing rules have not been established arises in particular with respect to macroprudential policies. Indeed,

the ability of countries to pursue distinct macroprudential policies can only work effectively if there is a pre-arranged coordination of resolution costs.

The recognition of the need for coordination has produced a recent agreement within the EU to apply similar time-varying capital requirement policies to the foreign branches of banks operating within a host country but regulated by the parent bank's country. Recent evidence in Aiyar et al. (2014a, 2014b) confirms the desirability of this coordination. They show that absent such coordination, foreign branches can be an important source of 'leakage' in macroprudential policy. Foreign-headquartered branches operating in the UK substantially offset (by about one-third) the effects of capital requirement changes on the aggregate supply of credit. Under the new arrangements, all EU-based institutions with branches outside their home country will now be subject to the macroprudential policy changes that are imposed in the countries where their branches operate. This reciprocity has been agreed up to an adjustment of 2.5 percentage points.

Only through the ex ante coordination of loss-sharing across countries can countries be protected from the fiscal implications of each other's differing regulatory policies, including differences in forbearance. Ideally, the EU will move towards a coherent regional approach to resolution policy and the recognition and allocation of loss. In the meantime, some form of clear agreement among countries that allocates losses according to some established rules is necessary as an accompaniment to a fragmented political reality.

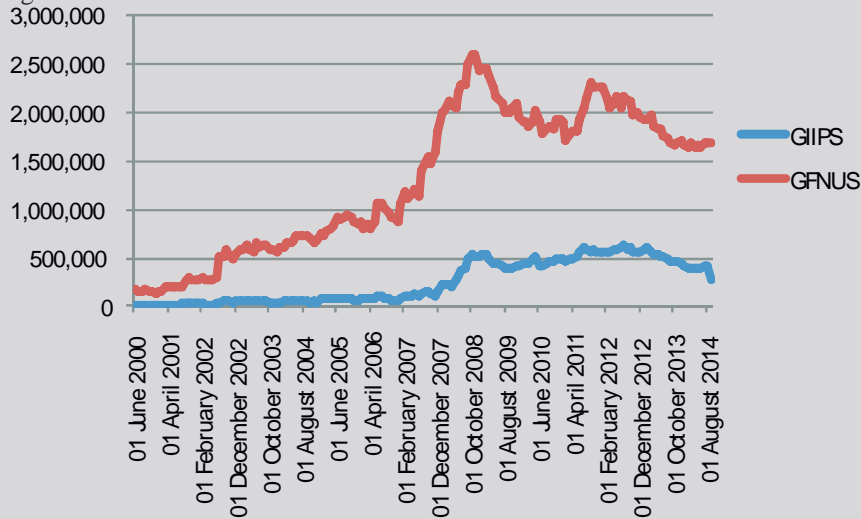
The need for coordination among countries is especially acute in the Eurozone. In 2011, the absence of area-wide financial supervision and crisis resolution mechanisms led to severe risks to the stability of the financial system stemming from negative feedback effects between national sovereign and banking sector risks. This experience led to increased policy integration in the Eurozone, under the auspices of the ECB. But this new authority still falls short of a full-fledged banking union, with fully centralised supervision and regulation, and resolutions funded by fiscal agreements to allocate any losses covered by taxpayers (see Marzinotto et al. 2011). The systemic financial

risks associated with the failure to enforce sufficient prudential capital requirements is apparent in Box 3, which uses market information (stock prices and measures of

Box 3 Diverging systemic risks

The figures below show the divergence in forward-looking measures of systemic risk contribution (or ‘vulnerability to a crisis’) based on the SRISK measure between the peripheral European countries (GIIPS: Greece, Ireland, Italy, Spain and Portugal) and core European countries (GFNUS: Germany, France, Netherlands, the UK and Switzerland). SRISK measures the market equity capital shortfall of a financial firm relative to a prudential benchmark (5.5% of book liabilities) in a future adverse scenario, which is a 40% collapse in the global stock market, and relies on an assessment of the downside risk of market equity of a firm in such an adverse scenario (for details, see Acharya et al. 2012). SRISK as plotted is aggregated for each group of countries based on market equity capital weighting for financial firms in each group.

Figure 3 SRISK: GIIPS versus GFNUS



Source: NYU Stern School of Business Volatility Lab (vlab.stern.nyu.edu/welcome/risk).

As the figure shows, SRISK for both GIIPS and GFNUS countries rose sharply from 2007, reaching a peak in late 2008/early 2009. For GFNUS countries, the subsequent peak in late 2011 is below the first peak. In contrast, for GIIPS countries, the peak in 2011-12 is as high as (in fact, slightly higher than) in 2008-09, highlighting that GIIPS countries had a banking crisis (intertwined with a sovereign risk crisis) in 2011-12 that was as worse as the banking crisis (due to housing and mortgage risks) in 2008-09, and that this vulnerability was reflected in market-equity-based capital shortfall estimates for financial firms in these countries.

bank risk exposures to the market) to gauge the leverage and systemic risk (SRISK) of European banks.

To summarise, the proposed two-level framework within Europe can be seen as a way to reconcile two logics: one of financial integration, which calls for an EU-wide framework; and one of economic and political conditions, with national financial cycles and national taxpayers, which calls for national frameworks. However, to pursue beneficial micro- and macroprudential policies, as well as timely and effective resolutions, there is a need for adequate coordination on ex post loss-sharing as well as ex ante macroprudential arrangements with respect to stress in EU-wide financial firms and markets. Such coordination, in turn, necessitates that the critical macroprudential tools outlined in this chapter be applied at the level of the banking union, or with a legally authorised directive from the banking union to the national authorities. One of the greatest risks attendant to European banking is the potential mismatch between the centralisation of protection and the decentralisation of supervision and resolution authority; such a mismatch creates a fiscal free-rider problem that could exacerbate undesirable regulatory forbearance.

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