



EUROPEAN CENTRAL BANK

EUROSYSTEM

Working Paper Series

Katarzyna Budnik, Johannes Kleibl

Macroprudential regulation in the European Union in 1995-2014: introducing a new data set on policy actions of a macroprudential nature

No 2123 / January 2018

Abstract. This paper introduces a new comprehensive data set on policies of a macroprudential nature in the banking sectors of the 28 member states of the European Union (EU) between 1995 and 2014. The Macroprudential Policies Evaluation Database (MaPPED) offers a detailed overview of the “life-cycle” of policy instruments which are either genuinely macroprudential or are essentially microprudential but likely to have a significant impact on the whole banking system. It tracks events of the introduction, recalibration and termination of eleven categories and 53 subcategories of instruments. MaPPED has been based on a carefully designed questionnaire, which has been completed in cooperation with experts from national central banks and supervisory authorities of all EU member states. This paper describes the design and structure of the new data set and presents the first descriptive analysis of the use of policy measures with a macroprudential nature in the EU over the last two decades. The results indicate that there has been a remarkable variation in the use of policies of a macroprudential nature both across EU countries and over time. Moreover, the analysis provides some tentative evidence of an impact of capital buffers, lending restrictions and caps on maturity mismatches on credit to the non-financial private sector in the EU as well as of the relative ineffectiveness of sectoral risk weights in controlling credit growth.

JEL codes: E50, E60, G28

Keywords: macroprudential policy, macroprudential instruments, financial stability, policy assessment

Non-technical summary

The new set of standards issued by the Basel Committee in 2010 and 2011 introduced a distinct toolbox of macroprudential instruments. Since then, governments and financial regulatory authorities in the European Union (EU) and elsewhere around the globe have been actively working on implementing this new toolbox. Yet, although macroprudential instruments have become an acknowledged part of the financial regulatory framework, we still lack systematic data that would allow examining their effectiveness.

This paper introduces a new comprehensive data set summarising policies of a macroprudential nature in the banking sectors of the 28 member states of the European Union (EU) between 1995 and 2014. The Macroprudential Policies Evaluation Database (MaPPED) offers a detailed overview of the “life-cycle” of policy instruments which are either genuinely macroprudential or are essentially microprudential but likely to have a significant impact on the whole banking system. The data set covers eleven categories and 53 subcategories of regulatory instruments, and almost 1,700 policy actions, i.e. events of introduction, recalibration or cancellation of these instruments. The set of policy instruments includes capital requirements, capital buffers, risk weights, leverage ratios, provisioning systems, lending standards restrictions, limits on credit growth, taxes on financial activities, limits on large exposures, liquidity requirements, and limits on currency and maturity mismatch.

MaPPED has been based on a carefully designed questionnaire, which has been completed in cooperation with experts from national central banks and supervisory authorities of all EU member states. The paper describes the data collection process and presents a first descriptive analysis of macroprudential policy actions in the EU member states over the last two decades. It uncovers both common trends and notable country-specific differences in the implementation of policies with a macroprudential character and helps putting the new post-Basel III approach of regulating financial systems into historical perspective.

The descriptive analysis shows that there has been significant variation in the use of macroprudential instruments in the EU member states over the past two decades. The use of different macroprudential instruments follows very different trends over time. The application of some instruments, such as limits on credit growth, lending standards restrictions, sectoral risk weights or liquidity requirements, seems to have responded to the financial cycle or to financial crisis events. In contrast, the use of other instruments, such as capital requirements and limits on large exposures, has in turn been more correlated with regulatory initiatives at the European level. Furthermore, despite the EU-wide harmonisation of many regulatory tools the analysis reveals a surprising degree of variation in the use of

macroprudential tools across countries. New member states that joined the EU only in or after 2004 have been, on average, much more active users of macroprudential instruments by both activating a greater number of instruments and by relying on a more diverse set of different instruments than existing member states.

Finally, the analysis also provides tentative evidence that both targeted instruments such as limits on loan-to-value ratios and broader instruments such as macroprudential capital requirements may have an impact on credit growth in the EU member states.

1. Introduction

As early as in 2008, the Basel Committee on Banking Supervision started discussing new regulatory approaches to address systemic risk and reduce the probability of a future financial crisis. The new set of standards issued by the Basel Committee in 2010 and 2011 introduced a distinct toolbox of macroprudential instruments. Since then, governments and financial regulatory authorities in the European Union (EU) and elsewhere around the globe have been actively working on implementing this new toolbox. Yet, although macroprudential instruments have become an acknowledged part of the financial regulatory framework, we still lack systematic data that would allow examining their effectiveness. As a consequence, assessing the impact of macroprudential measures has been one of the most challenging tasks currently faced by policy-makers in the EU.

This paper introduces the new Macroprudential Policies Evaluation Database (MaPPED), which aims at closing this gap. MaPPED offers a comprehensive data source of regulatory policy instruments and actions of a macroprudential nature targeting the banking sectors in the EU member states from 1995 to 2014. The data set covers eleven categories and 53 subcategories of regulatory instruments, and almost 1,700 policy actions, i.e. events of introduction, recalibration or cancelation of these instruments. The set of policy instruments includes capital requirements, capital buffers, risk weights, leverage ratios, provisioning systems, lending standards restrictions, limits on credit growth, taxes on financial activities, limits on large exposures, liquidity requirements, and limits on currency and maturity mismatch. The new data set has been based on a carefully designed questionnaire, which has been completed in a collective effort with experts from the national central banks and supervisory authorities of the 28 EU member states. The paper describes the data collection process and provides detailed information on the types, coverage and definitions of policies included in the data set. Furthermore, it presents a first descriptive analysis of macroprudential policy actions in the EU member states over the last two decades. It uncovers both common trends and notable country-specific differences in the implementation of policies with a macroprudential character and helps putting the new post-Basel III approach of regulating financial systems into historical perspective.

The notion of a macroprudential policy instrument, commonly defined as a prudential tool that is designed to target systemic risk, is relatively new. Therefore, in order to document the history of relevant banking sector regulation, it is necessary to develop an operational definition of a policy instrument with a macroprudential nature. According to our definition, an instrument has to fulfil at least one of the following conditions to qualify as a policy tool with a macroprudential nature: (i) it has been dubbed as macroprudential either by the relevant

legislation or by the authority applying the instrument; (ii) it has been implemented to reach specific macroprudential goals (also when it is essentially microprudential or a monetary measure); or (iii) its conceptual design or transmission channels are comparable with those of present macroprudential measures (e.g. minimum capital requirements that share broad similarity with macroprudential capital buffers) and it is likely to have a system-wide impact on the banking sector. These criteria have been used to develop a closed list of eleven types of policy instruments that have been covered by the MaPPED questionnaire. The respondents were asked to provide a complete history of the use of instruments falling under the scope of the questionnaire in their jurisdiction.

MaPPED covers both macroprudential policy instruments and their application in the form of specific policy actions. Thereby, it draws a clear distinction between the two concepts. While a prudential *policy instrument* refers to any tool that can be used to impose quantitative restrictions on the structure of banks' assets or liabilities (e.g. minimum capital requirements) or on certain activities (e.g. the prohibition of foreign exchange loans), a *policy action* refers to an event of activation, change in the level or scope, or deactivation of a policy instrument. Furthermore, the linking of policy actions related to the same instrument allows following the full "life-cycle" of each instrument, from its implementation, via changes in its intensity, to its termination.

Each policy action in MaPPED is described by a comprehensive set of attributes. First, each policy action is characterised as having a loosening, neutral or tightening impact on the policy stance. This attribute allows measuring changes in the intensity of macroprudential regulation over time. Second, each policy action is also described in terms of its objective such as controlling excessive credit growth, countering maturity mismatches or increasing the resilience of the banking system to exchange rate volatility. Finally, the data set also provides information on the scope of the application of an instrument involved in a policy action, i.e. the types of institutions, which have to comply with the measure, or the segments of banks' activities, which are directly affected by a measure.

In addition to presenting an overview of the most relevant attributes of policy instruments and actions in the data set, this paper provides a first descriptive analysis of macroprudential policy activity in the EU over the last two decades. Specifically, the paper (i) analyses the evolution of macroprudential policy in terms of its tightening and loosening over time, (ii) examines the differences in the intensity and scope of macroprudential policies across EU countries, and (iii) provides a simple analysis of the effectiveness of selected macroprudential policy instruments. The descriptive analysis shows that there has been significant variation in the use of macroprudential instruments in the EU member states over

the past two decades. The use of different macroprudential instruments follows very different trends over time. The application of some instruments, such as limits on credit growth, lending standards restrictions, sectoral risk weights or liquidity requirements, seems to have responded to the financial cycle or to financial crisis events. The application of other instruments, such as capital requirements and limits on large exposures, has in turn been more correlated with regulatory initiatives at the European level. Furthermore, despite the EU-wide harmonisation of many regulatory tools the analysis reveals a surprising degree of variation in the use of macroprudential tools across countries. Thereby, new member states that joined the EU only in or after 2004 have been much more active users of macroprudential instruments by both activating a greater number of instruments and by relying on a more diverse set of different instruments than existing member states. Finally, the analysis also provides tentative evidence that both targeted instruments such as limits on loan-to-value ratios and broader instruments such as macroprudential capital requirements may have an impact on credit growth in the EU member states.

The remainder of the paper proceeds as follows. Section 2 reviews existing data collections of macroprudential policy measures. Section 3 describes the coverage of the new MaPPED data set and provides a clear definition of what is understood as a “measure of a macroprudential nature”. Section 4 offers information on the data collection process, while section 5 presents basic descriptive statistics on the number of policy actions covered as well as several key attributes included in the data set. Section 6 provides a first descriptive analysis of the use of macroprudential measures in the EU between 1995 and 2014, while section 7 provides a first descriptive assessment of the effectiveness of these policy measures in controlling credit growth. Section 8 concludes and proposes directions for future research using the new data. Finally, the annex offers additional descriptive statistics as well as a detailed codebook for users of the data set.

2. Existing data sets on macroprudential policy measures

To date, several other data sets have been collected with the aim of capturing policy measures of a macroprudential nature. Similarly to MaPPED, these data collections have been based on official publications or surveys of regulators and central bank officials. Borio and Shim (2007) as well as Shim et al. (2013) construct a database of prudential measures as well as non-interest policy measures related to real estate exposures for a sample of 60 countries (including 27 EU member states) from 1995 to 2012. The IMF (2011) and Lim et al. (2011) focus on a broader set of macroprudential measures including caps on loan-to-value ratios, ceilings on credit growth or countercyclical capital requirements, and summarize the

experience of 49 countries (including 20 EU member states) from 2000 to 2010. Also Cerutti et al. (2016) provide data for a diverse set of measures including capital buffers, exposure limits, loan to value caps and reserve requirements for 64 countries (including 27 EU member states) from 2000 to 2014. The IMF Global Macroprudential Policy Instruments Database (GMPI), a new IMF initiative, provides very detailed information on policies with macroprudential objectives for 135 countries (including 25 EU member states), but so far it covers only one data point, i.e. May 2013.² Finally, in addition to these global data collection efforts, there are also several data sets of macroprudential measures with a regional focus. For example, Hilbers et al. (2005), Vandebussche et al. (2012), Gersl and Jasova (2014), Zhang and Zoli (2016) and Dimova et al. (2016) collect data on monetary and prudential measures in Central and Eastern European countries (CEEC).

That being said, existing data sets of macroprudential measures often suffer from common drawbacks. First, they typically capture the entering into force of policy instruments, but often underreport their further evolution or their termination. Second and maybe more importantly, actual coverage of measures often differs by countries. This seems to result from different perceptions of survey respondents of what should be reported as a macroprudential measure when responding to open-text questionnaires (such as Lim et al. 2011 or GMPI).³ This creates data quality and cross-country comparability issues and may bias the analytical results based on the data sets.

MaPPED has been constructed with these concerns in mind. The design of the questionnaire and repeated consistency checks aimed at overcoming comparability issues across measures and across countries. The closed list of types of instruments covered by the questionnaire ensured a uniform data coverage across countries. Thereby, to the degree possible, the data collection leveraged on the fact that a significant part of regulatory instruments in EU member states originate in EU level regulations, which commonly have to be transposed into national law.

² In addition to these original data sets, there are also several analyses that combine information from these data sets and sometimes complement them with additional information sources (see, e.g., Akinci and Olmstead-Rumsey 2015).

³ These differences in coverage become particularly apparent for EU countries. In data collections based on largely open-text questionnaires (such as Lim et al. 2011 or GMPI) data sets usually include specific instruments only for some EU member states, although these instruments have been harmonised across the whole EU.

3. Data coverage

This section provides information on the country and time coverage of MaPPED as well as the types of policy measures that are included in the data set. In addition, the annex provides a detailed list of all attributes collected for each policy action.

3.1. Country and time coverage

The initial version of the data set includes policy actions from 1995 until 2014 for all 28 EU member states. It also covers policy measures introduced before 1995, as long as these measures were still in force in or after 1995.⁴

3.2. Coverage of policy instruments

The key difficulty in any historical evaluation of macroprudential policies is that the term “macroprudential instrument” is a rather recent invention, formalised in detail only in the Basel III standards. Basel III introduced a set of instruments, which can be used to address systemic risks, and as such can be regarded as part of the macroprudential toolbox. Yet, in order to learn about the effects of this new set of tools, it is necessary to analyse country experiences over more than just the post-Basel III years and for a broader set of instruments than those defined in the standards.

Authors working on the empirical evaluation of macroprudential policies have addressed this issue in various ways. In a careful study of macroprudential policies in the U.S., Elliott et al. (2013) rely on the objectives of policies and define actions of a cyclical macroprudential nature as policy actions which were used to slow or accelerate credit growth and that respond to economic or financial cycles rather than represent a permanent change in regulation.

In contrast, other data collection approaches such as the IMF (2011) or the GMPI Database put relatively less emphasis on the purpose of introducing a policy but construct an exclusive list of instruments which they consider as macroprudential. The exact scope of the various databases differs. However, with some simplification, they include instruments which fall into one of the following categories: general capital requirements, countercyclical capital buffers,

⁴ Looking forward, by relying on regular reporting of macroprudential policy actions to the ECB, the data set will be updated on a bi-annual basis in order to provide an always up-to-date data source for policy actions of a macroprudential nature in the EU.

time-varying provisioning, sector specific capital buffers, lending standards restrictions, reserve requirements, limits on credit growth, limits on interbank exposures, concentration limits, liquidity requirements, levies and taxes on financial institutions, and limits on currency mismatches.

The data collection for MaPPED aimed at ensuring that the data set allows assessing the effectiveness of macroprudential policies as defined in the Basel III standards. To this end, we have developed a coherent set of three criteria for defining what constitutes a measure of a macroprudential nature. On the basis of these three criteria, we derived the list of instruments to be included in the data set.

First, the list of instruments includes tools which can be used to address systemic risks and have been introduced by the EU's Capital Requirements Regulation and Capital Requirements Directive IV (CRR/CRDIV). These encompass a set of capital buffers (such as countercyclical capital buffers, buffers for systemically important institutions, and systemic risk buffers), sectoral risk weights, liquidity requirements (such as liquidity coverage ratios and net stable funding requirements), and large exposure limits (see e.g. ESRB 2014a). This list has been complemented with other instruments, which are commonly perceived as macroprudential by national authorities applying them, even though they are (so far) outside the scope of EU legislation. These are, e.g., loan-to-deposit ratios, limits on foreign exchange mismatch, or lending standards such as limits on loan-to-value (ESRB 2014b).

Second, the list of instruments includes other prudential and monetary policy tools, which have been actually employed to reach macroprudential goals by national authorities. These include a set of microprudential measures (e.g. loan-loss provisioning frameworks) as well as a few instruments of a monetary policy nature (e.g. marginal reserve requirements) or a fiscal nature (i.e. taxes on financial institutions and activities). The resulting list of instruments thus covers all instruments that have been commonly covered by data sets and analyses of macroprudential policy tools in the previous literatures, including capital-related instruments, liquidity-related instruments, lender-based credit-related instruments and borrower-based credit-related instruments (see, e.g., Lim et al. 2011 Dell'Ariccia et al. 2012, De Nicolò et al. 2012, and Claessens et al. 2013).

Third and finally, this list of macroprudential instruments has been complemented with prudential tools whose structure and transmission channels closely resemble those of macroprudential instruments and which have a system-wide impact. Standard examples of such instruments are minimum capital requirements. Although these instruments are typically not considered macroprudential, they can offer an important source of information on the likely impact of macroprudential measures. For instance, in order to study the impact

of countercyclical capital buffers, one can assess the transmission of other changes in own funds requirements that are expressed with reference to risk weighted assets.⁵

In essence, the selection of instruments for the data set aimed at covering all instruments which can affect the empirical identification and consequently also the assessment of the impact of macroprudential instruments – either because they are explicitly macroprudential or because they have a similar impact and can thus influence empirical estimates of the impact of macroprudential instruments.

Following these principles, a final list of 53 types of instruments of a macroprudential nature was defined. These instruments can be grouped into eleven broader categories of tools. Table 1 presents the complete list of categories and subcategories that are included in the data set.

Table 1: Categories and subcategories of policy instruments in the data set, 1995-2014.

Category	Subcategories	Frequency: instruments	Frequency: actions	% changes in stance
Minimum capital requirements	Capital adequacy ratio (CAR)	31	155	71.6%
	Tier 1 capital ratio	20	25	92.0%
	Common Equity Tier 1 capital ratio (CET1)	21	23	100.0%
	Core Tier 1 capital ratio	6	9	100.0%
Capital buffers	Countercyclical capital buffer (CCyB)	2	2	0.0%
	Capital conservation buffer	9	10	80.0%
	Systemic risk buffer	4	4	100.0%
	G-SII capital buffer	0	0	.
	O-SII capital buffer	0	0	.
	Other capital requirements targeting most important institutions	8	10	100.0%
	Other capital surcharges and own funds requirements	14	19	94.7%
	Profit distribution restrictions	10	15	86.7%
Risk weights	Risk weights for loans backed by residential property	34	85	83.5%
	Risk weights for loans backed by commercial property	29	52	50.0%
	Other sectoral risk weights	7	15	80.0%
Leverage ratio	Leverage ratio	2	3	100.0%
Loan-loss provisioning	Loan classification rules	19	55	63.6%
	Minimum specific provisioning	13	44	79.6%
	General provisioning	10	26	80.8%
	Capital treatment of loan loss reserve	10	17	70.6%
Lending standards	Loan-to-value (LTV) limits	24	53	94.3%
	Loan-to-income (LTI) limits	1	1	100.0%

⁵ This idea is not new in the literature. For example, Bridges et al. (2014) analyse the impact of capital-based macroprudential measures by exploiting the variation in essentially microprudential minimum capital requirements across British banks.

restrictions	Debt-to-income (DTI) limits	0	0	.
	Debt-service-to-income (DSTI) limits incl. interest rate stress testing	15	25	96.0%
	Limits on interest rates on loans	7	8	100.0%
	Maturity and amortisation restrictions	12	21	95.2%
	Other income requirements for loan eligibility	4	4	100.0%
	Limits on the volume of personal loans	10	38	86.8%
	Other restrictions on lending standards	26	45	88.9%
Limits on credit growth and volume	Reserve requirements related to banks' liabilities	12	84	92.8%
	Asset-based reserve requirements	11	47	95.7%
Levies/taxes on financial institutions	Tax on assets/liabilities	20	34	94.1%
	Tax on financial activities	2	2	100.0%
Limits on large exposures and concentration	Single client exposure limits	94	192	82.3%
	Intragroup exposure limits	29	54	90.7%
	Sector and market segment exposure limits	20	35	88.6%
	Funding concentration limits	3	5	100.0%
	Limits on qualified holdings outside financial-sector	56	104	81.7%
	Other exposure and concentration limits	15	24	87.5%
Liquidity requirements and limits on currency and maturity mismatch	Loan to deposit (LTD) ratios	6	6	83.3%
	Other stable funding req. incl. Net Stable Funding Requirement	7	12	66.7%
	Short-term liquidity coverage ratios incl. Liquidity Coverage Ratio	40	76	75.0%
	Liquidity ratios and deposit coverage ratios	14	24	87.5%
	Limits on FX mismatches	14	36	83.3%
	Other liquidity requirements	15	32	87.5%
Other measures	Structural measures	1	3	100.0%
	Margin requirements	6	19	100.0%
	Other regulatory restrictions on financial activities	4	8	100.0%
	Limits on deposit rates	4	6	100.0%
	Debt resolution policies	8	19	36.8%
	Crisis management tools	8	31	100.0%
	Changes in regulatory framework	4	13	7.7%
	Other	20	40	45.0%
Total		761	1670	81.6%

Notes: The frequency of instruments column reports the number of distinct policy instruments included in the respective subcategory, while the frequency of policy actions column reports the number of policy actions that have been taken using these instruments. The % changes in stance column reports the share of tightening or loosening policy actions in the respective subcategory.

3.3. Policy actions as units of observation

Existing data sets of macroprudential policies typically rely on the macroprudential policy instrument as the unit of observation. The MaPPED data set follows a more granular approach by relying on policy actions as the unit of observation. This allows keeping track of both specific policy instruments and the different policy actions that have been taken using a specific instrument. Using policy actions as the unit of observation allows capturing changes in macroprudential policy stances in more detail and enables researchers to track each

action resulting in a tightening or loosening of prudential requirements. At the same time, the data set keeps track of specific instruments by linking entries related to the same tool (i.e. providing information on whether an action was preceded or followed by another action). Lastly, the data also provide information on links between actions that allow selecting out actions and instruments which were introduced in the same policy package (i.e. were introduced in tandem and aimed at achieving a common goal).

4. Data collection

MaPPED has been developed in a collective effort of ECB staff and experts from national central banks and supervisory authorities of the 28 EU member states during 2015–2016. The data collection was performed via a detailed questionnaire that was sent to national authorities and asked for information on policy actions related to the eleven categories of policy instruments listed in Table 1. For each policy action the questionnaire asked for, amongst others, the month and year of entering into force of a policy action, a short description of the main provisions of the action, the impact of the policy action (whether they should be interpreted as a tightening or loosening of prudential requirements), the type of policy action (e.g. activation, recalibration or termination of an instrument), the implemented level of the instrument (if it can be quantified), the sector affected by the action, and the consequences of non-compliance. The annex provides a complete list of all attributes, while descriptive statistics for selected ones are discussed in the next section.

The data collection process followed a three-step approach. In a first step, country questionnaires were pre-filled with measures reported in existing data sets of a global (Borio and Shim 2007; IMF 2011; Lim et al. 2011; Shim et al. 2013) or regional scope (Vandenbussche et al. 2012; Gersl and Jasova 2014). Moreover, these data were further supplemented with information from the quarterly questionnaire of the ECB's Financial Stability Committee (FSC), from FSC and ESRB notifications, from official publications and policy notes published by central banks or supervisory authorities, or from country-specific and regional studies. This step ensured that the data set covers all instruments and related actions captured by alternative sources.

In a second step, national central banks and supervisory authorities verified and added information on any other measures of a macroprudential nature that had been in place between 1995 and 2014.

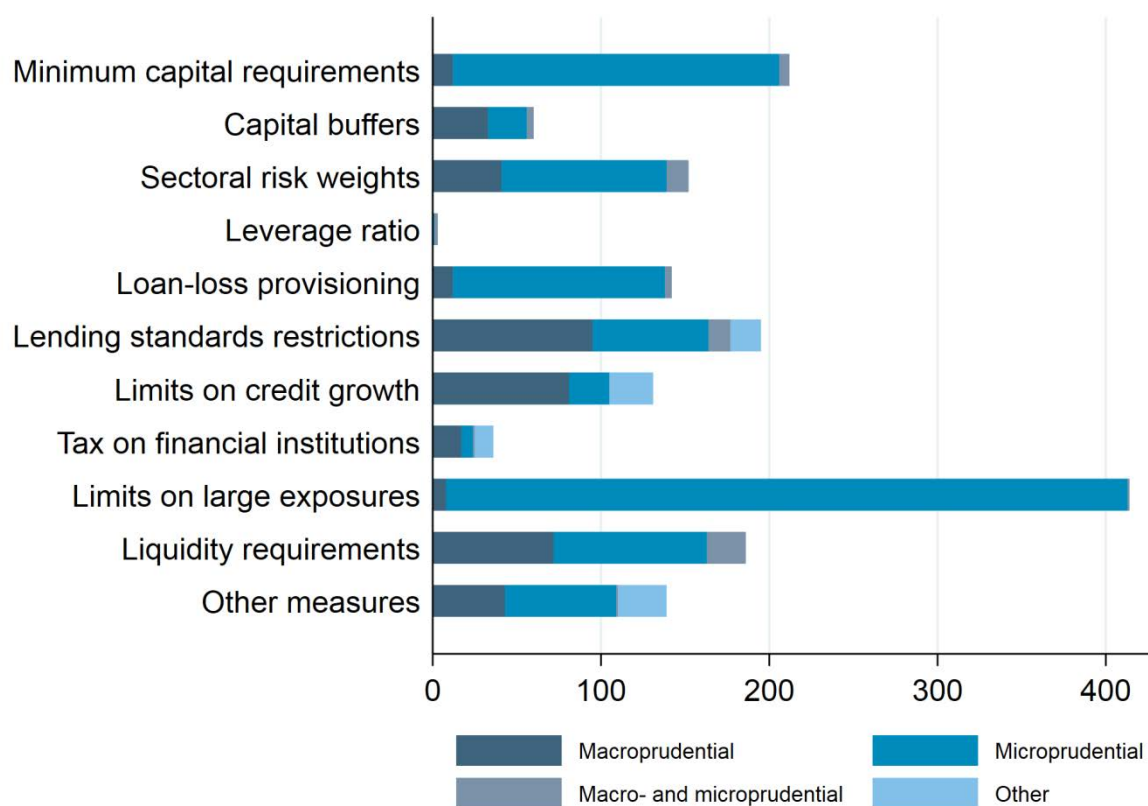
In the final step, systematic completeness tests were conducted (e.g. against the World Bank's Bank Regulation and Supervision Survey, as described by Barth et al., 2001) and comparison exercises to arrive at a consistent coverage of the cross-country data.

5. Basic descriptive statistics

In total, the data set covers more than 750 single policy instruments and almost 1,700 single policy actions, which have been taken in the 28 EU member states between 1995 and 2014 or that were already in force by 1995. As figure 1 indicates, the by far most frequently reported actions are related to limits on large exposures (with more than 400 actions) followed by minimum capital requirements, liquidity requirements, and lending standards restrictions (with each around 200 actions). Moreover, a smaller but still significant number of more than 100 policy actions are reported for the categories of sectoral risk weights, loan-loss provisioning, limits on credit growth, and other measures. Finally, also more than 60 actions are reported for the category of macroprudential capital buffers, while only few countries report actions related to taxes on financial institutions and only one country reports the implementation of a leverage ratio.

The questionnaire also asked respondents to classify each policy action according to its main character, i.e. whether its character was perceived as macroprudential, as microprudential, as both at the same time, or as having a different character (e.g. fiscal or monetary). Figure 1 classifies the policy actions in each category according to their main character. As the figure shows, policy actions related to minimum capital requirements, sectoral risk weights, loan-loss provision and large exposure limits usually had a mainly microprudential character. In contrast, the majority of policy actions related to capital buffers, limits on credit growth and taxes on financial institutions had a mainly macroprudential character. Finally, for lending standards restrictions, liquidity requirements and other measures, both policy actions with a macroprudential character and policy actions with a microprudential character were reported frequently. Thus, the results indicate that the perceptions of survey respondents on which types of instruments have a rather macroprudential or microprudential character can vary significantly for some instruments.

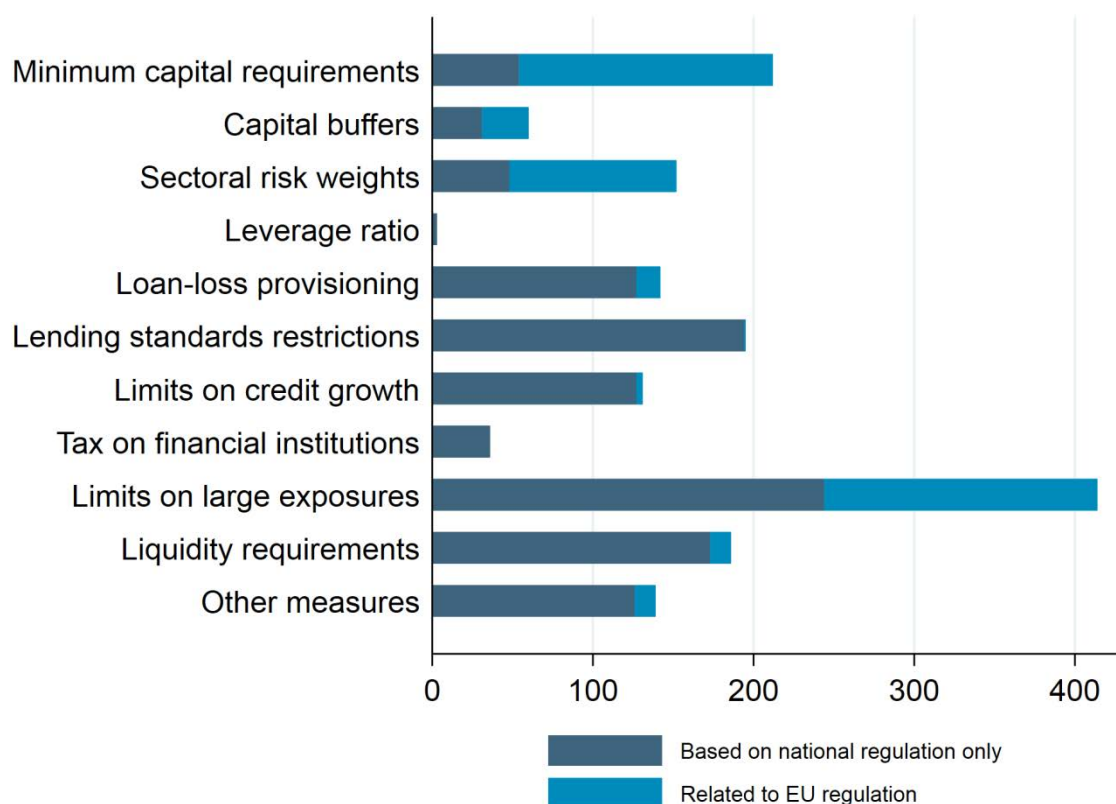
Figure 1. Frequency of reported policy actions by instrument category and main character of policy action.



Notes: Chart based on responses to questionnaire items “Type of a tool – Category” and “Main character of a policy action” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

Figure 2 again reports the frequency of reported policy actions by instrument type, but classifies policy actions into those that are based on national regulations and those that stem from regulatory initiatives at the EU level. As shown in the figure, the high number of actions related to exposure limits and minimum capital requirements typically results from the regular adjustment of exposure limits, capital adequacy ratios and other capital ratios in response to the Basel Accords and standards, the EU’s CRDs and other EU regulations such as the 1992 Directive on the Monitoring and Control of Large Exposures of Credit Institutions. In contrast, the application of lending standards restrictions and liquidity requirements reflects a national preference for the use of these tools, which – in the case of liquidity requirements – has been most strongly pronounced in the new member states that joined the EU in or after 2004.

Figure 2. Frequency of reported policy actions by instrument category and regulation underlying the instrument.



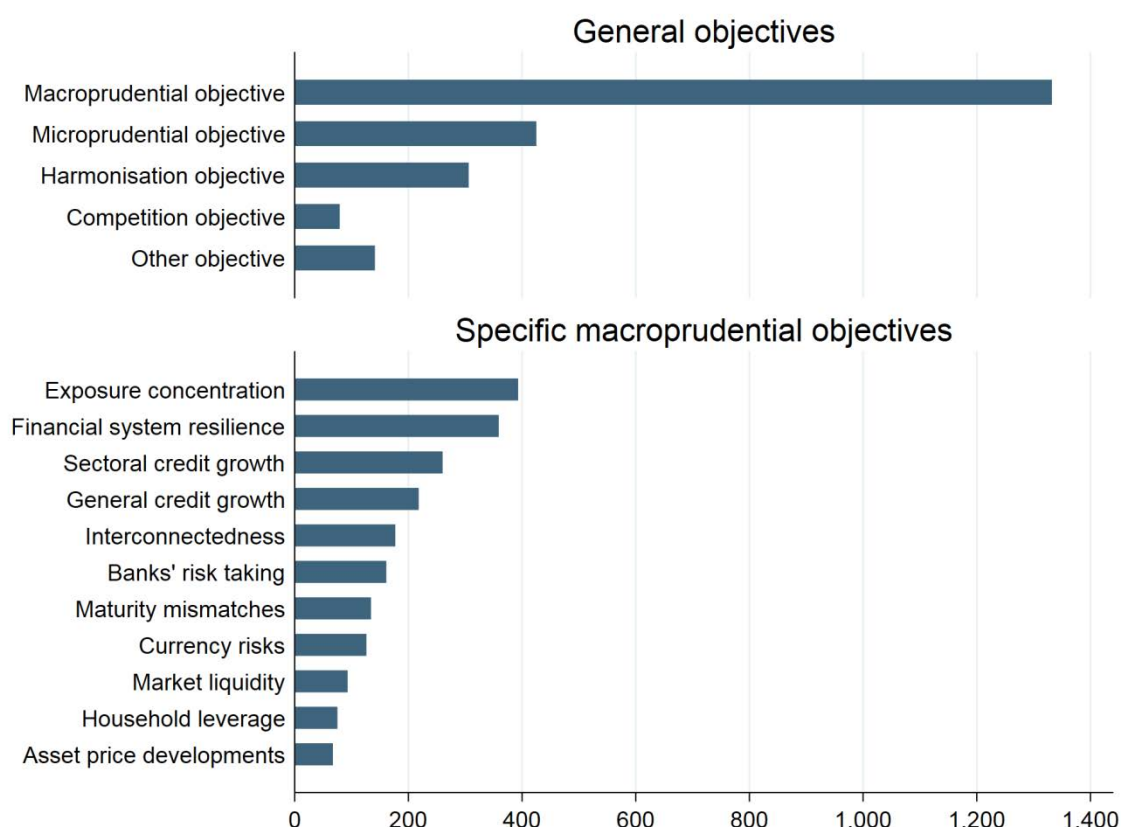
Notes: Chart based on responses to questionnaire items “Type of a tool – Category” and “General regulation underlying the design of an instrument” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

In addition to asking respondents whether the main character of a policy action was macro- or microprudential (see figure 1), the questionnaire also asked for the specific objectives with which a policy action was taken. Multiple objectives could be reported for the same action. Among the objectives included in the questionnaire, most can be considered as macroprudential policy objectives. These include objectives related to addressing general and sectoral credit growth, bank and household leverage, developments in asset process and foreign currencies, exposure concentration, interconnectedness, maturity mismatches on banks’ balance sheets and finally the resilience of the financial system as a whole. As the upper part of figure 3 indicates, a great majority of actions in the database were taken by authorities following one of these macroprudential objectives. There are also a significant number of actions that were introduced only for microprudential (bank-level oversight) reasons, which relates to the relatively high number of policy actions related to minimum

capital requirements and large exposure limits. Moreover, a smaller number of actions were introduced to fulfil harmonisation objectives, competition objectives or other objectives.

The lower part of figure 3 reports the specific macroprudential objectives that policy-makers took into account when pursuing a policy action. A significant share of actions followed the objective of mitigating exposure concentration as well as the general objective of enhancing the resilience of the financial system. Moreover, many other actions were taken in order to address sectoral credit growth or general credit growth, which is in line with other recent findings on the main motives for macroprudential policy-making in Europe and around the world (see ESRB 2015; Lim et al. 2011). In addition, several actions also addressed the interconnectedness of banks, their risk taking, maturity mismatches, currency risks and market liquidity, while only a very small number of actions addressed household leverage and asset price developments.

Figure 3: Frequency of reported policy actions by their objective.



Notes: Chart based on responses to questionnaire item “Objective of a measure” (see annex for details). The same action can have multiple objectives. In the upper part of the figure, an action was considered to have a macroprudential objective, if it had at least one specific macroprudential objective. Data include all policy actions implemented or in force during 1995-2014.

Table 2 indicates the number of policy actions that pursued each of the different objectives across the different categories of policy instruments. In the upper part of the table grey cells report the most often reported general objective for each instrument. In the lower part grey cells report the three most often reported specific macroprudential objectives for each instrument type. Moreover, in the lower part frequencies printed in bold indicate the most often used instrument type for each of the specific macroprudential objectives. As the upper part of the table shows, policy actions involving all instrument types were mostly taken in order to pursue macroprudential objectives. Only actions related to minimum capital requirements were most of the time taken in order to pursue microprudential objectives. Moreover, a significant number of policy actions in the categories of minimum capital requirements, sectoral risk weights and limits on large exposures were taken for harmonisation reasons rather than or in addition to addressing existing risks in the banking system. These actions usually aimed at implementing common EU regulations (see also figure 2).

As indicated in the lower part of the table, addressing financial system resilience belonged to the three most often pursued objectives for eight out of the eleven different instrument types. Addressing banks' risk taking and addressing sectoral or general credit growth belonged to the three most often pursued objectives for several instrument categories. In addition, the lower part of the table shows that specific policy objectives were often pursued using particular types of instruments. For instance, issues of exposure concentration and interconnectedness were almost always addressed using limits on large exposures; maturity mismatches and currency risks were in most cases addressed by relying on liquidity requirements; and sectoral credit growth, asset price developments and household leverage were most often addressed by using lending standards restrictions. Policy-makers seem to have had a preference for particular types of policy instruments when trying to achieve specific policy goals.

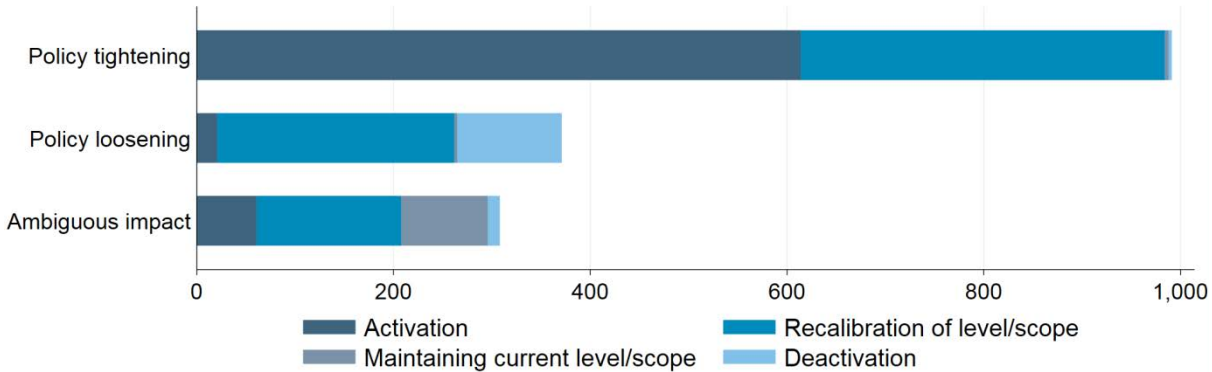
Table 2: Frequency of reported policy actions by type of instrument category and objective of the policy measure.

Objectives	Minimum capital requirements	Capital buffers	Sectoral risk weights	Leverage ratio	Loan-loss provisioning	Lending standards restrictions	Limits on credit growth	Tax on financial institutions	Limits on large exposures	Liquidity requirements	Other measures
General objectives											
Macroprudential	90	98	113	5	105	228	122	30	396	198	146
Microprudential	211	29	48	0	56	9	9	9	54	49	17
Harmonisation	77	12	69	0	25	17	18	1	70	24	33
Competition	7	4	0	0	23	8	0	4	17	0	22
Other	0	3	4	0	1	21	35	23	2	12	79
Specific macroprudential objectives											
Exposure concentration	0	15	11	0	0	0	0	0	378	1	0
Financial system resilience	47	64	26	0	81	28	10	23	42	76	59
Sectoral credit growth	0	2	54	0	10	174	19	2	10	1	25
General credit growth	4	29	15	0	15	80	84	3	10	12	5
Interconnectedness	0	22	0	0	0	0	0	0	170	7	1
Banks' risk taking	42	18	54	5	13	11	9	8	8	15	4
Maturity mismatches	0	0	0	0	0	3	9	8	10	130	1
Currency risks	3	5	0	0	5	44	6	0	2	67	1
Market liquidity	0	2	0	0	1	0	15	0	0	50	60
Asset price developments	1	2	16	0	1	59	4	0	0	1	25
Household leverage	0	0	5	0	8	49	8	0	1	1	37

Notes: Table based on responses to questionnaire items "Type of a tool – Category" and "Objective of a measure" (see annex for details). The same action can have multiple objectives. In the upper part of the table, an action was considered to have a macroprudential objective, if it had at least one specific macroprudential objective. Data include all policy actions implemented or in force during 1995-2014. Grey cells report the most often reported general objective for each instrument (upper part) and the three most often reported specific macroprudential objectives for each instrument type (lower part). Frequencies printed in bold indicate the most often used instrument type for each specific macroprudential objective (lower part).

Another key attribute, which has been collected for each policy action, is whether the impact of the policy action should be interpreted as a tightening, as a loosening or as ambiguous. Figure 4 shows that almost 60% of the reported policy actions have led to the tightening of policies, whereas the remaining policy actions had a loosening or ambiguous impact. Moreover, the chart also shows that the tightening of policy instruments was almost always caused by the activation of instruments or the recalibration of existing instruments. In contrast, the loosening of instruments was typically triggered by the recalibration or deactivation of existing instruments. Finally, policy actions with an ambiguous impact were typically linked to the recalibration or the maintenance of the level or scope of existing instruments.

Figure 4: Frequency of reported policy actions by the resulting impact of the action.

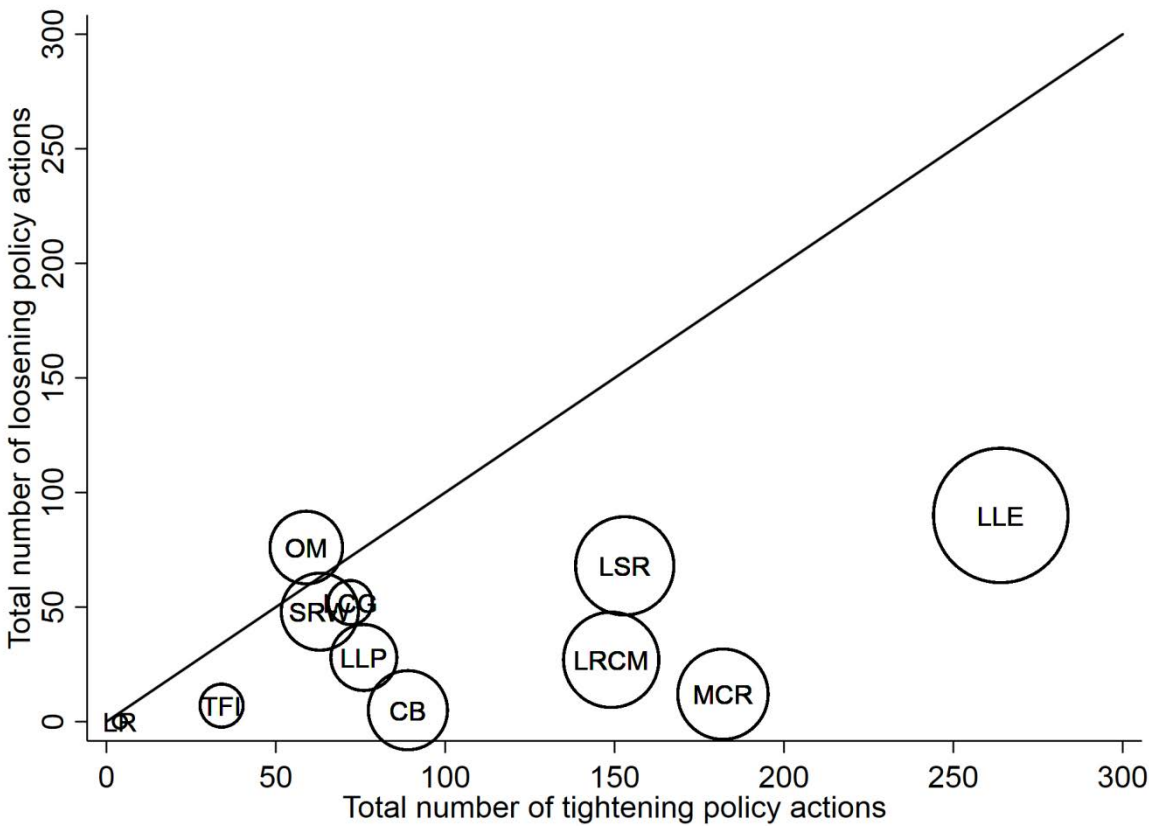


Notes: Chart based on responses to questionnaire items “Strengthening / Loosening” and “Type of a policy action” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

Figure 5 analyses the relative tightening and loosening of policies across different types of instruments. For each instrument type, the x-axis reports the number of tightening policy actions, while the y-axis reports the number of loosening policy actions that have been reported during the 1995-2014 period. Thereby, the size of the marker circles indicates the number of distinct policy instruments that have been employed in each category. The figure shows that on an aggregate level there has been no significant change in policy stance for sectoral risk weights, limits on credit growth, other measures and leverage ratios, as all four types of instruments are relatively close to the 45-degree line that indicates an equal number

of tightening and loosening policy actions between 1995 and 2014. In contrast, a moderately tightened policy stance can be observed in the categories of loan-loss provisioning and lending standards restrictions, and a strongly tightened stance can be observed for capital buffers, liquidity requirements, minimum capital requirements and limits on large exposures.

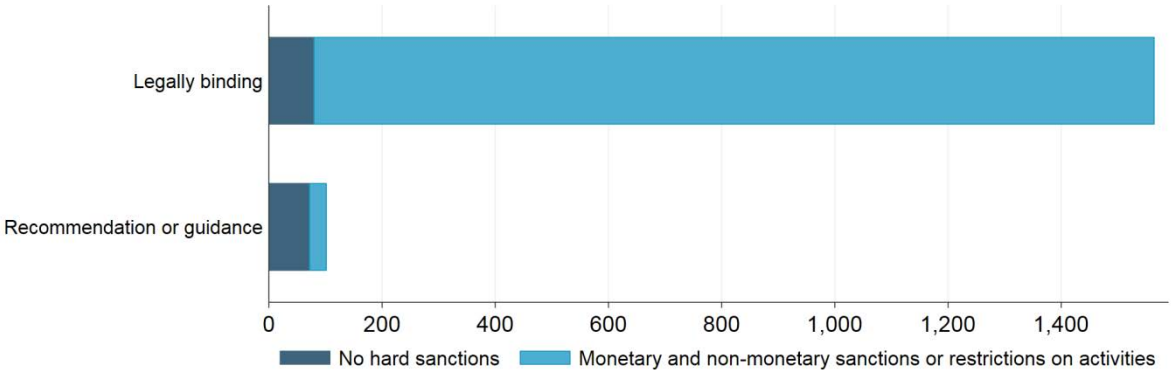
Figure 5: Frequency of tightening policy actions vs. frequency of loosening policy actions by type of instrument.



Notes and legend: Chart based on responses to questionnaire item “Strengthening / Loosening” (see annex for details). Policy actions with an ambiguous impact are excluded from the chart. Data include all policy actions implemented or in force during 1995-2014. The size of the marker circles indicates the number of policy instruments that have been used for a particular instrument type. MCR – minimum capital requirements; CB – capital buffers; SRW – sectoral risk weights; LR – leverage ratios; LLP – loan-loss provisioning; LSR – lending standards restrictions; LCG – limits on credit growth; TFI – taxes on financial institutions; LLE – limits on large exposures; LCRM – liquidity requirements and limits on currency and maturity mismatches; OM – other measures.

Figure 6 shows that close to 94% of the policy actions in the data set had a legally binding character. In contrast, only about 6% of the policy actions were issued as recommendations. For almost all legally binding actions there are significant consequences of non-compliance in form of monetary and non-monetary sanctions or restrictions on activities, while no significant sanctions are attached to most of the recommendations.

Figure 6: Frequency of reported policy actions by legal character.

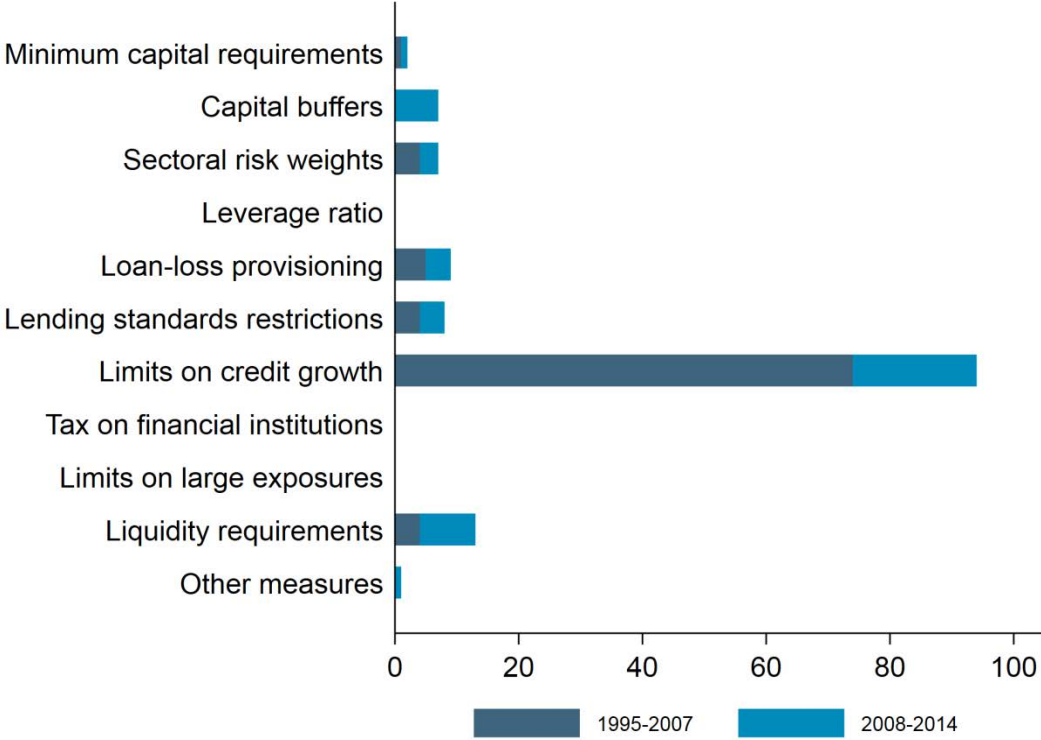


Notes: Chart based on responses to questionnaire items “Legal character” and “Consequences of non-compliance” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

One key new component of the new macroprudential framework that has been put in place in response to the global financial crisis has been the introduction of countercyclical macroprudential instruments and most prominently the countercyclical capital buffer. Figure 7 reports the number of policy actions related to instruments with explicit countercyclical design for the pre-crisis period (1995-2007) and for the (post-) crisis period (2008-2014).⁶ The figure shows that the use of countercyclical policy tools has already been relatively common prior to the financial crisis. However, the figure also indicates that prior to the crisis instruments with a countercyclical design to a large extent consisted of limits on excessive credit growth (mostly used by the new EU member states), while in the later part of the sample a greater variety of instruments including capital buffers and to a larger extent also liquidity requirements have been used with an explicit countercyclical design.

⁶ In the MaPPED questionnaire, an instrument has been defined as having a countercyclical design if (i) its formula ensures that its level automatically tightens when systemic risks intensify and loosens when they fade, or (ii) if its calibration is regularly (e.g. quarterly) revised along with the intensity of cyclical systemic risk, e.g. by linking the revisions of an instrument to the evolution of indicators of systemic risk.

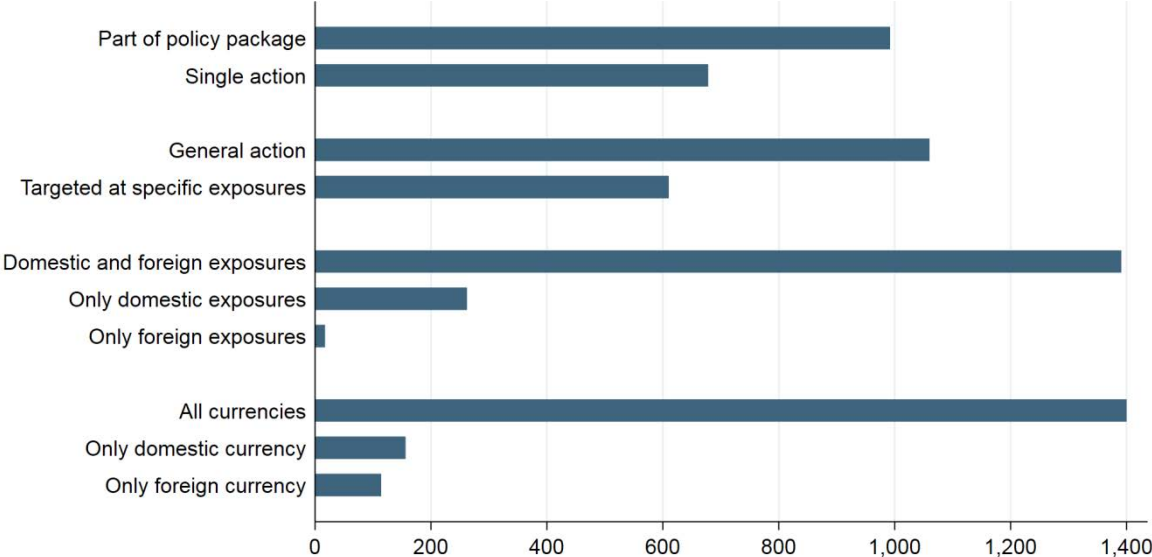
Figure 7: Frequency of reported policy actions with a countercyclical design by type of policy instrument.



Notes: Chart based on responses to questionnaire items “Countercyclical design” and “Type of policy action – Category” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

Figure 8 reports the number of policy actions broken down by several other dimensions. Most of the policy actions (59%) were taken as an element of a broader policy package, i.e. jointly with other actions and in order to achieve a common objective. 37% of the policy actions were undertaken targeting specific type of bank exposures or activities (such as exposures to the real estate sector), while 63% of the policy actions were undertaken on a general basis. Furthermore, only 1% of the policy actions targeted only exposures to foreign counterparts. 16% of the policy actions targeted only exposures to domestic counterparts, most of those actions involving instruments falling under the category of reserve requirements or lending standards. 16% of the policy actions selectively targeted exposures either in domestic (9%) or foreign currency (7%).

Figure 8: Frequency of reported policy actions by implementation approach, targeted market segment, targeted countries of exposures and targeted currencies.



Notes: Chart based on responses to questionnaire items “Other policy actions”, “Market segment”, “Domestic vs. foreign exposure” and “Currency” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

6. EU policies with a macroprudential nature in 1995-2014

This section uses the newly collected data set for several descriptive analyses of the implementation of policies of a macroprudential nature in the EU between 1995 and 2014. The first subsection examines the evolution of tightening and loosening policy actions for different instruments at the EU level between 1995 and 2014, while the second subsection provides a basic cross-country comparison of the use of macroprudential policies in the 28 EU member states over the past two decades.

6.1. A descriptive analysis of policy tightening and loosening of over time

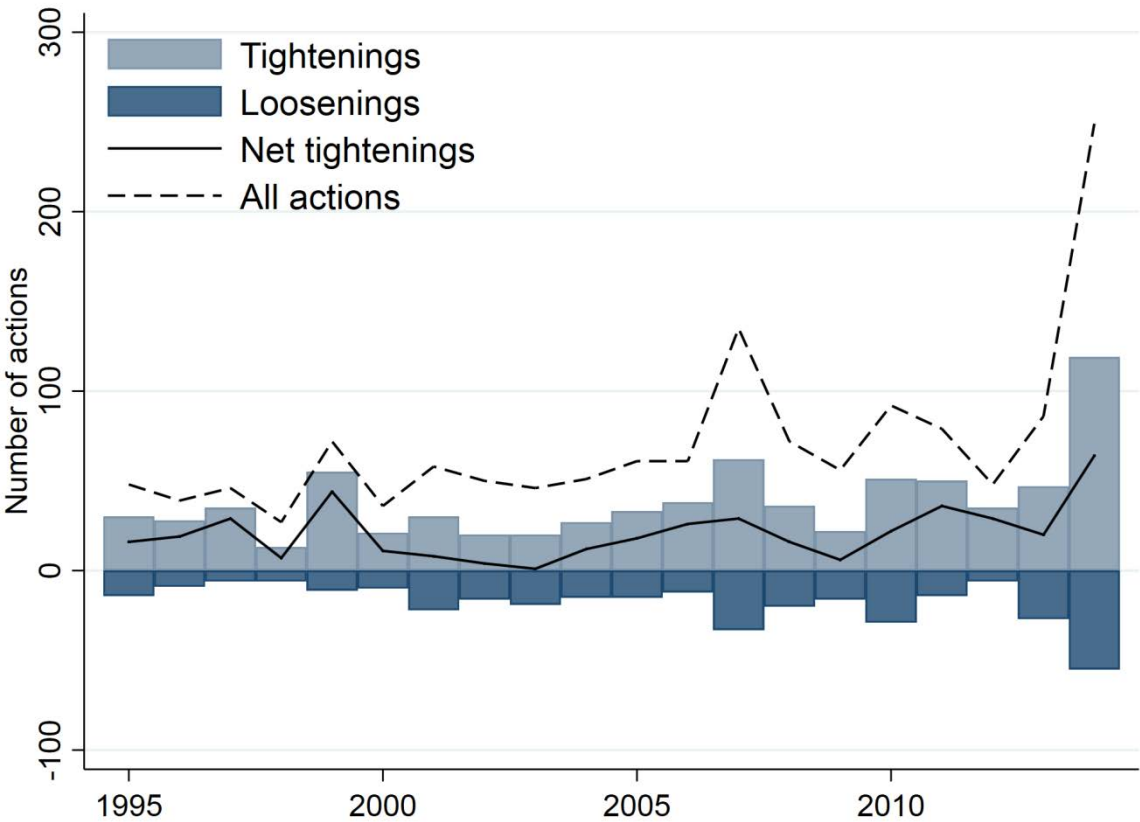
Macroprudential policies across the EU may follow common trends because of correlations of financial cycles across countries or as a consequence of common EU directives and regulations. To examine these common trends in the macroprudential policy-making in the

EU countries, this subsection analyses the evolution of tightening and loosening policy actions for different macroprudential instruments at the EU level over time.

Figure 9 shows the number of tightening and loosening policy actions at the aggregate EU level over time. The chart combines the information for all categories of policy actions of a macroprudential nature. Thereby, the light blue bars indicate the number of tightening policy actions, while the dark blue bars indicate the number of loosening policy actions. The solid line provides a simple measure of policy stance by showing the net number of tightening policy actions (i.e. tightening actions minus loosening actions). Moreover, the dashed line reports the total number of actions, which also includes actions with an ambiguous impact.

The mid-1990s saw a gradual tightening of the macroprudential policy stance in the EU. This tightening to some extent reflects the late phasing in of the Basel I Accord via adoption of the relevant EU directives in several EU jurisdictions. The ensuing period of moderate adjustments in the policy stance 2000-2005 was followed by a policy tightening during the upswing of the financial cycle until 2007 and again by a significant relaxation of this tightening with the outbreak of the financial crisis in 2008. Since 2010, there has been again a notable tightening of macroprudential policies, which presumably aimed at increasing the resilience of banking sectors and which culminated in the significant tightening observed in 2014 as a consequence of the introduction of the CRR/CRDIV package.

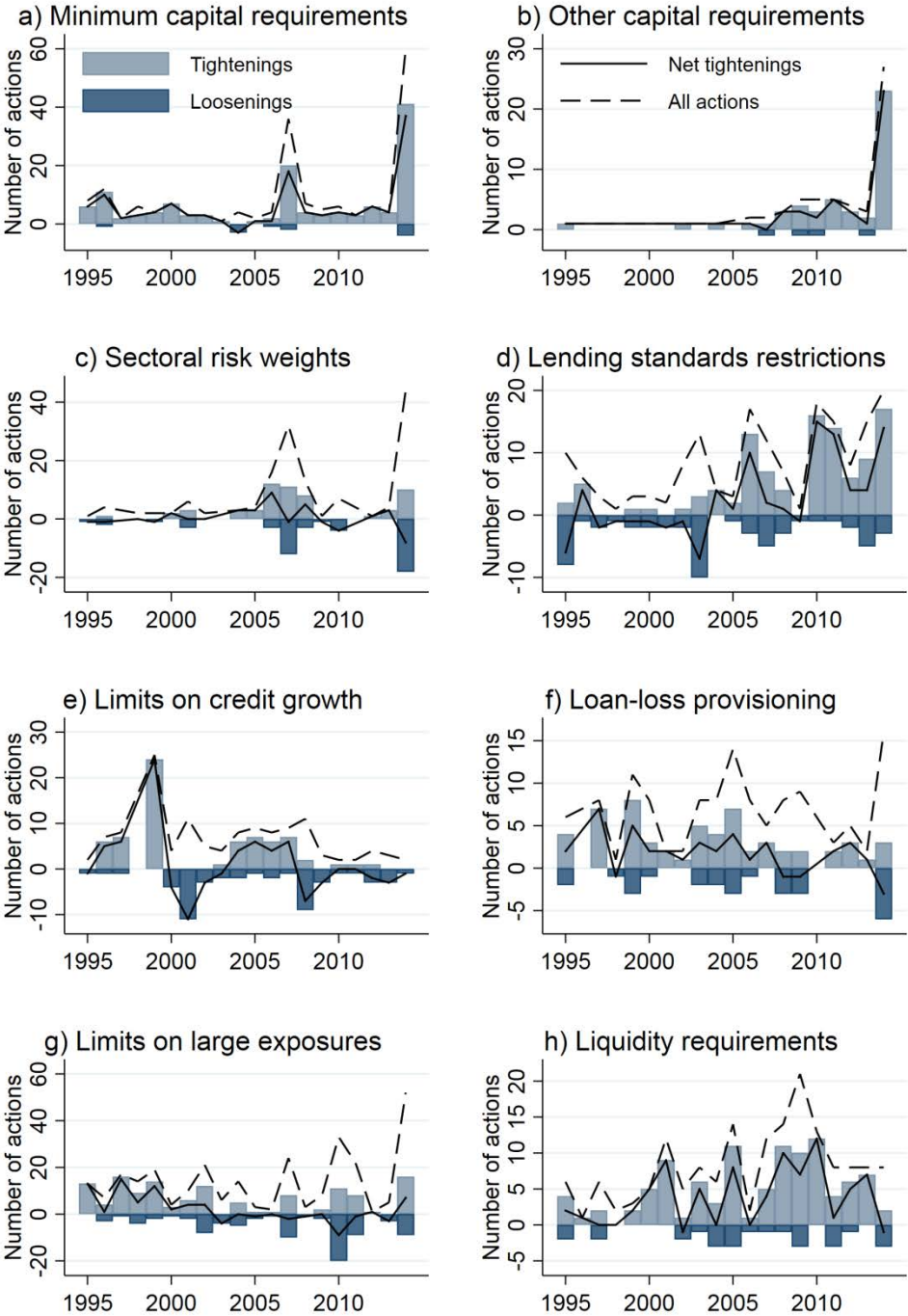
Figure 9: Evolution of macroprudential policy stance in the EU between 1995 and 2014.



Notes: Chart based on responses to questionnaire item “Strengthening / Loosening” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

When examining changes in policy stance for the different categories of instruments, a more nuanced picture emerges. Figure 10 disaggregates the information by type of macroprudential instrument and reports eight charts showing the trends in policy stances for different categories of instruments.

Figure 10: Evolution of policy stance for different macroprudential instruments in the EU between 1995 and 2014.



Notes: Chart based on responses to questionnaire items “Type of a tool – Category” and “Strengthening / Loosening” (see annex for details). Data include all policy actions implemented or in force during 1995-2014. The categories “leverage ratio” and “levies or taxes on financial institutions” are not displayed, as too few policy actions were reported for them.

For minimum capital requirements, the periods of net tightening in 2007 and 2014 clearly result from the introduction of the CRD I-III and the CRR/CRDIV packages (see figure 10a). In addition, a notable number of member states have started implementing additional capital requirements from 2008 on (see figure 10b). Moreover, the introduction of capital buffers (in CRDIV) including countercyclical capital buffers, capital conservation buffers, capital requirements for systemically important institutions and systemic risk buffers has led to a significant tightening of capital-based policies (see figure 10b) starting in 2014. Altogether, the data show that there has been a significant tightening in capital requirements over the last years, which has been far stronger than earlier periods of policy tightening.

Turning to sectoral risk weights and lending standards, a moderate policy tightening in the boom years ahead of the financial crisis can be observed, which suggests a somewhat countercyclical pattern of their application (see figures 10c and 10d). Moreover, the data show that lending standards restrictions have again been tightened significantly since 2010, which reflects an increasing acknowledgement of their role in curbing the housing cycle and a growing appreciation of these tools in preventing bubbles in the housing market (see figure 10d).

The use of limits on credit growth including reserve requirements clearly follows the financial cycle with a clear tightening during the late 1990s and mid-2000s, and a loosening during the recession of the early 2000s and in response to the financial crisis from 2008 on (see figure 10e). In contrast, the implementation of policy actions related to loan-loss provisioning does not seem to follow a clear pattern (see figure 10f).

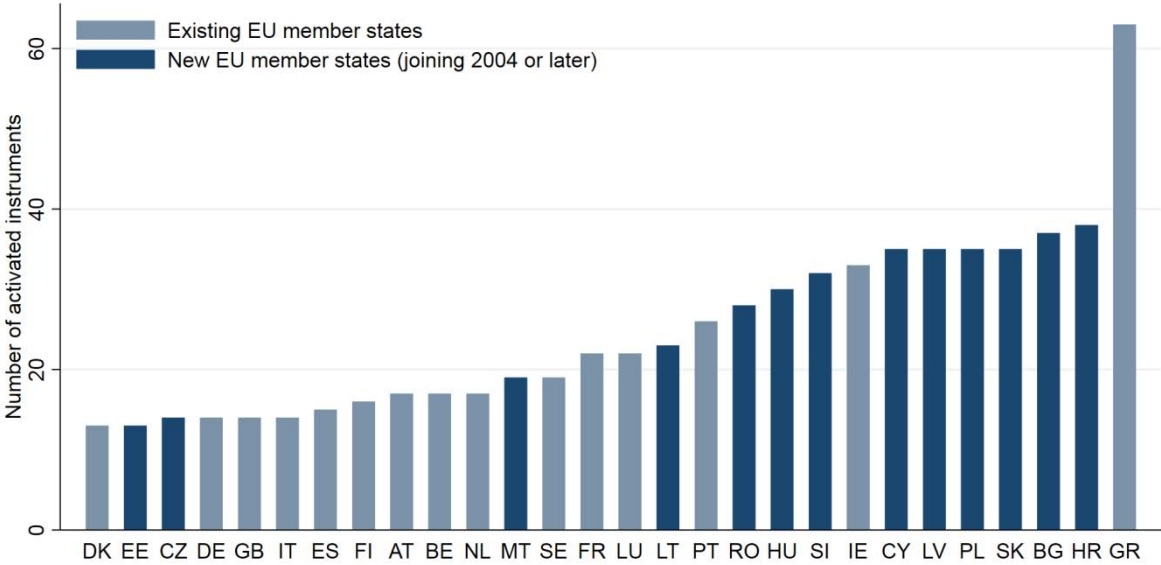
Changes in the tightness of limits on large exposures seem to result mostly from the general harmonisation of these limits through EU directives such as the Second Banking Directive, the 1992 Directive on the Monitoring and Control of Large Exposures of Credit Institutions, and the different CRD packages (see figure 10g). In contrast, for liquidity requirements, it is clearly visible that the liquidity crisis starting in 2007/2008 led to a significant tightening of liquidity requirements in the EU (see figure 10h). Following 2007, member states have been actively introducing additional liquidity requirements, thus anticipating the introduction of a harmonised liquidity coverage ratio across the EU from 2015 on.

Altogether, the descriptive analysis reveals that there has been significant variation in the use of macroprudential instruments in the EU over the past two decades. This variation can be observed both over time and across the different categories of instruments. For some instruments such as sectoral risk weights, lending standards, limits on credit growth and liquidity requirements, macroprudential policy-making seems to have responded to the financial cycle or to financial crisis events. For other types of instruments such as capital requirements or limits on large exposures, policy-making seems to largely reflect the introduction of harmonised requirements at the European level. Altogether, there seems to be systematic variation in macroprudential policy-making in the EU.

6.2. A descriptive analysis of macroprudential policy-making across countries

This subsection provides a comparative analysis of the intensity and scope of macroprudential policies that have been used in the EU member states. To illustrate the differences in the intensity of macroprudential policy actions across countries, figure 11 reports the number of activated instruments of a macroprudential nature for each country until 2014. The figure shows that there is significant variation in the intensity with which EU countries have used macroprudential tools. For example, Greece, Bulgaria, Croatia, Cyprus, Slovakia, Poland, Latvia, Ireland, Slovenia and Hungary activated more than 30 policy instruments until 2014, while the Czech Republic, Estonia, Germany, Denmark, the United Kingdom and Italy activated less than 15 instruments. Thereby, figure 11 highlights that new member states that joined the EU in 2004 or later have been on average much more active users of macroprudential tools than existing member states. This is likely related to the fact that some of these countries experienced a financial crisis during the 1990s (e.g. the Czech Republic or Hungary), and almost all of them faced post-transition challenges such as high volatility of macroeconomic and credit aggregates, occasional outflows of capital (or a risks thereof), sudden corrections in exchange rates or risks related to high dollarisation of the economy.

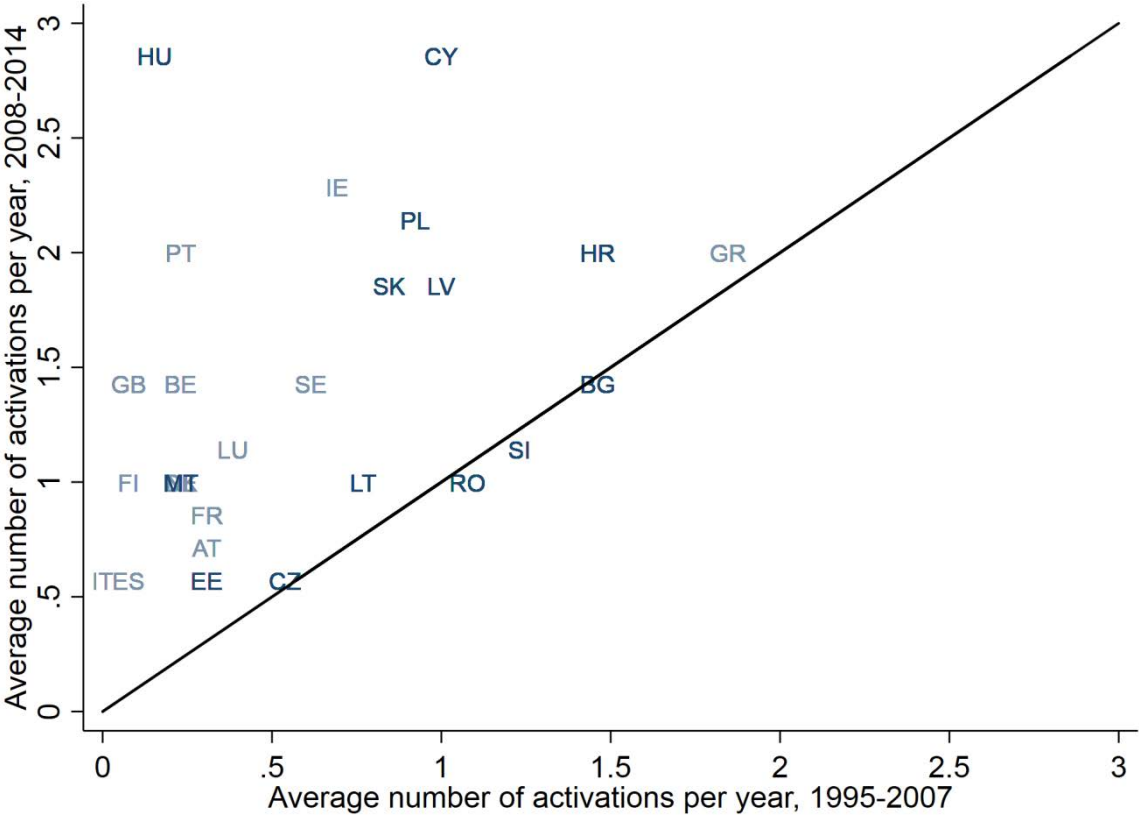
Figure 11: Number of activated policies of a macroprudential nature across EU member states until 2014.



Notes: Chart based on responses to questionnaire item “Type of a policy action” (see annex for details). Data cover total number of policy activations and thus also include instruments that have been activated and at a later point in time been deactivated again. Data include all policy actions implemented or in force during 1995-2014.

Figure 12 adds a time dimension to this comparison by plotting the average number of activated instruments per year during the pre-crisis period (1995-2007, on the x-axis) against the average number of activated instruments per year during the (post-)crisis period (2008-2014, on the y-axis). Thereby, countries located below the 45° line activated more policies prior to the crisis, while countries located above the line activated relatively more policies between 2008 and 2014. The figure shows that most countries activated a significantly higher number of policies of a macroprudential nature per annum during and following the crisis than prior to the crisis. This holds in particular for countries whose financial sectors were relatively strongly affected by the crisis e.g. Cyprus, Hungary, Ireland and Portugal. Yet, there are also a few countries that clearly deviate from this trend. Bulgaria, the Czech Republic, Greece, Romania and Slovenia were almost equally active in setting macroprudential policies during both periods. Thereby, Greece introduced a very high number of macroprudential measures both prior to the crisis, including a significant number of credit growth limits and lending standards restrictions, and following the crisis.

Figure 12: Average number of activated policies per year across EU member states during 1995-2007 and during 2008-2014.

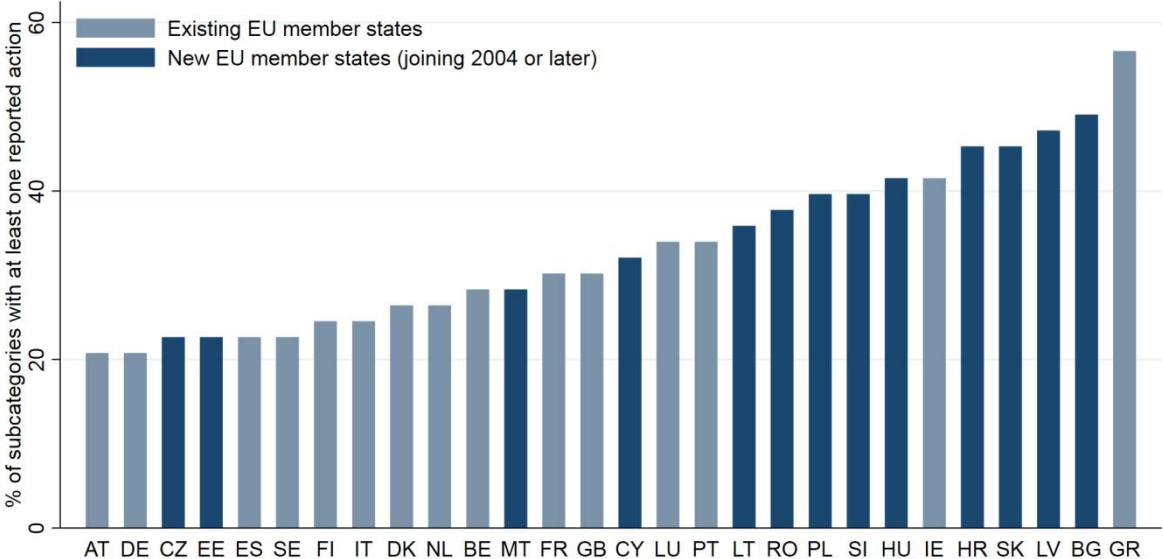


Notes: Chart based on responses to questionnaire item “Type of a policy action” (see annex for details). Data cover total number of policy activations and thus also include instruments that have been activated and at a later point in time been deactivated again. Data include all policy actions implemented during 1995-2014. Black line indicates 45° line.

In addition to comparing the intensity with which member states have used macroprudential tools, it is also possible to compare countries according to the scope of tools that they have used. To do so, figure 13 reports the share of subcategories from which a country has reported at least one policy action. Thereby, a higher share of subcategories indicates that a country has used a greater variety of instruments of a macroprudential nature. Again, significant differences across EU member states emerge. While Greece, Bulgaria, Latvia, Slovakia, Croatia, Ireland and Hungary have used instruments from more than 40 out of the 53 different subcategories, Austria, Germany, the Czech Republic, Estonia, Spain, Sweden,

Finland and Italy used instruments from less than 25 subcategories. Also in this case, new EU member states have on average been using a much greater variety of macroprudential tools than existing member states.

Figure 13: Share of subcategories with at least one reported policy action across EU member states until 2014



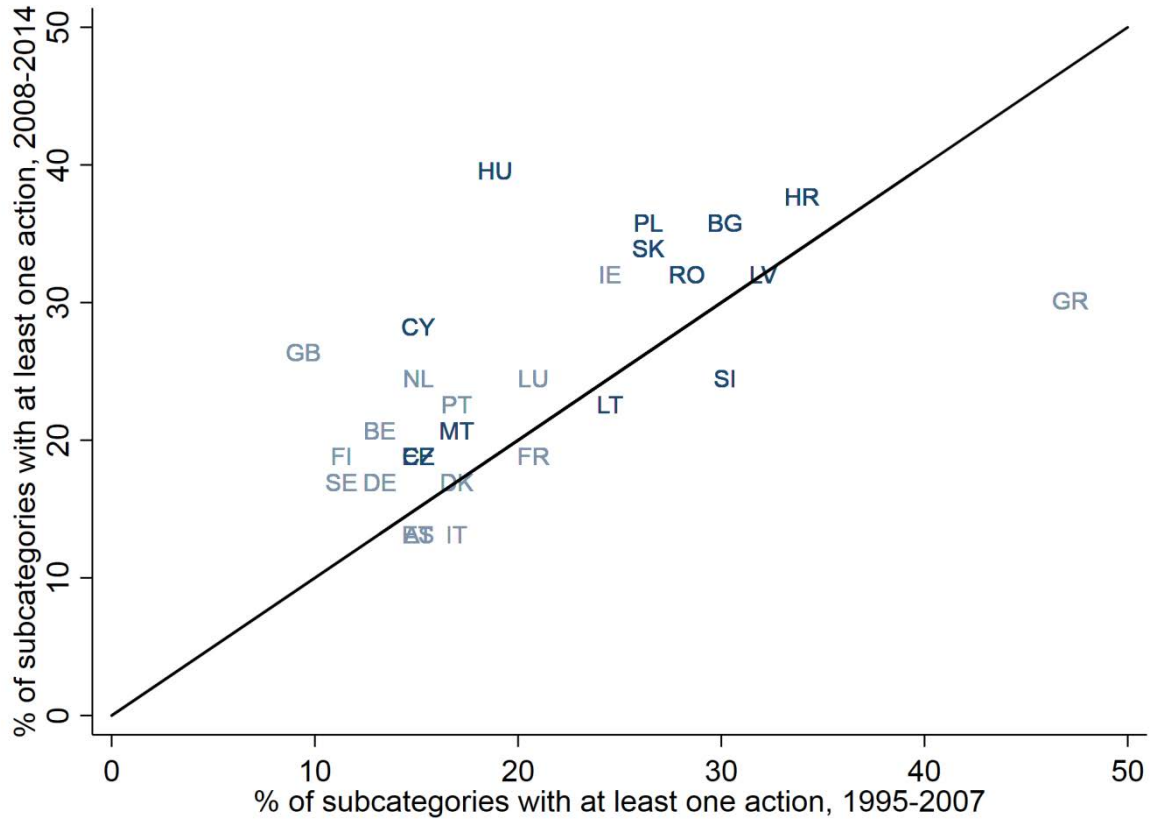
Notes: Chart based on responses to questionnaire item “Type of a tool - Subcategory” (see annex for details). Data include all policy actions implemented or in force during 1995-2014.

Figure 14 plots the share of subcategories with at least one reported policy action during the 1995-2007 period (on the x-axis) against the same share during the 2008-2014 period (on the y-axis). The figure clearly shows that the variety of types of macroprudential policies has expanded during and in the aftermath of the financial crisis. Most countries lie above the 45° line, indicating that they have used a more diverse set of tools of a macroprudential nature during the 2008-2014 period than prior to 2008. The only clear exception to this pattern is Greece, which however has used a relatively large variety of different instruments during both sample periods. Altogether, the variety of tools that have been employed has significantly expanded over time. Specifically, the period from 2008 to 2014 has seen a much more active use of instruments related to minimum capital requirements (Tier 1 capital ratio,

CET 1 capital ratio and Core Tier 1 capital ratio), capital buffers (countercyclical capital buffer, capital conservation buffer, systemic risk buffer and other capital requirements targeting most important institutions), lending standards restrictions (DSTI limits and limits on interest rates of loans), taxes on financial institutions, and selected other subcategories such as LTD ratios, debt resolution policies or crisis management tools. This greater variety of tools seems to reflect both the introduction of the new macroprudential toolkit at the EU level as part of the CRR/CRDIV package and the use of a wider set of instruments at the national level to respond to the financial crisis .

Summing up, the descriptive analysis reveals a significant variation in the intensity and scope of macroprudential policy-making across EU member states. Interestingly, new member states that joined the EU in or after 2004 both tend to activate a higher number of instruments of a macroprudential nature and tend to use a greater variety of different instruments. Moreover, the analysis shows that with the outbreak of the financial crisis most countries increased both their policy activity in terms of the number of activated policies and the scope of used policies in terms of the variety of different instruments applied. This variation in the use of policy instruments across countries and over time once again highlights the need for future analyses to improve our understanding of both the sources and the consequences of differences in macroprudential policy-making across EU member states.

Figure 14: Share of subcategories with at least one reported policy action across EU member states during 1995-2007 and during 2008-2014.



Notes: Chart based on responses to questionnaire item “Type of a tool - Subcategory” (see annex for details). Data include all policy actions implemented during 1995-2014. Black line indicates 45° line.

7. A bivariate analysis of the effectiveness of macroprudential policy tools

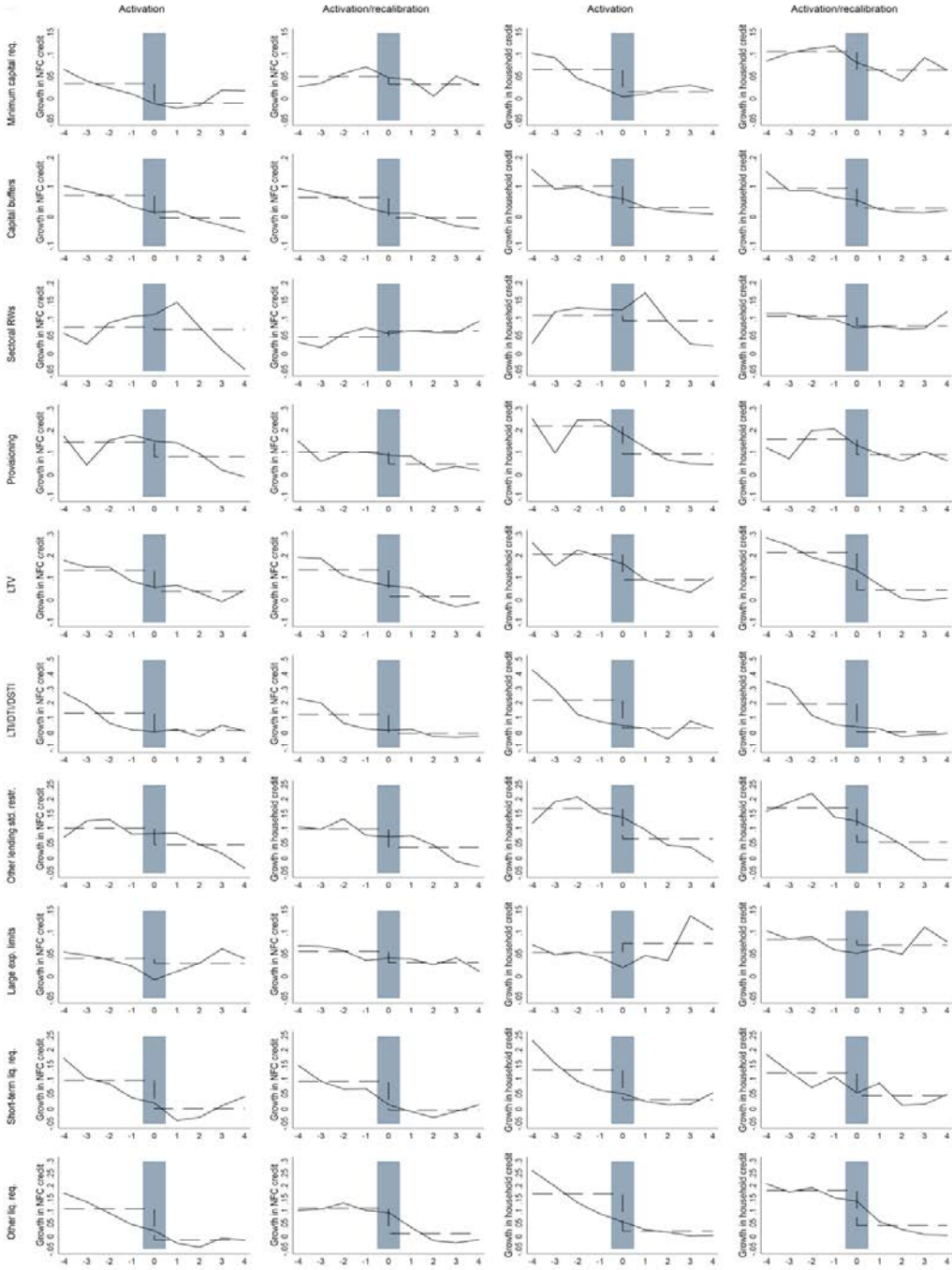
This section presents a simple analysis of the impact of selected policy instruments on credit growth, which – when becoming excessive – is typically considered as a source of systemic risk. The analysis considers the bivariate correlation between the tightening of policy instruments and measures of credit growth. The tightening of policy instruments is measured in two different ways: (i) as an activation of new instruments (a narrow measure), (ii) as either an activation of new instruments or recalibration of existing instruments (a broader measure). Due to its bivariate nature, the analysis does not allow drawing any conclusions on the causality of the relationships. Yet, it may be indicative of a potential impact of various policy

instruments on credit developments and provides an intuitive sense of the possible effects of the macroprudential policy tools.

The first four rows of figure 15 show the relationship between annual credit growth and the tightening of capital-based policy instruments, namely the introduction of minimum capital requirements, other capital buffers including profit distribution restrictions, regulatory loan-loss provisioning standards and sectoral risk weights. The solid lines in the two columns of charts on the left-hand side present the annual growth in MFI credit to non-financial corporations (NFCs) before and after the tightening of an instrument, while the solid lines in the two columns of charts on the right-hand side illustrate the annual growth in MFI credit to household. Moreover, dashed lines show the average credit growth in the four years prior to the tightening and in the four years after the tightening.

On average, the growth in MFI credit to NFCs and households declined notably with the introduction of new minimum capital requirements, capital buffers or new loan-loss-provisioning standards. However, it remained largely unaffected by the introduction of new sectoral risk-weights. The decline in credit following a tightening resulting from only activations of new instruments was either similar or larger compared to the decline in credit following a tightening resulting from either activations or recalibrations. Moreover, in most cases where credit growth was on average lower after a policy change, it started to decline already a year prior to the entering into force of a measure, which could be due to possible announcement effects.

Figure 15: Average growth in credit to NFCs and households before and after the tightening of macroprudential measures.



Legend and notes: Solid line indicates the average annual growth in MFI loans. Dashed line indicates the average annual growth in MFI loans four years before and following a policy change. Charts based on responses to questionnaire items “Strengthening / Loosening” and “Type of a policy action” (see annex for details). Data include all policy actions implemented or in force during 1995-2014. Credit data are Quarterly Sector Accounts data on total MFI loans to NFCs and total MFI loans to households from the ECB Statistical Data Warehouse.

Rows 5 to 7 of figure 15 present the results of similar bivariate analyses for three types of borrower-based measures. The average growth of credit to NFCs declined significantly with the introduction or recalibration of LTV, LTI, DTI or DSTI limits and other lending standards restrictions, providing tentative evidence that these macroprudential tools may be effective in mitigating credit growth.

Finally, the last three rows of figure 15 present the results of the analyses for large exposure limits and liquidity-based measures, distinguishing between caps on short-term maturity mismatches on banks' balance sheets (similar to the Liquidity Coverage Ratio) and other measures limiting maturity mismatches. While credit growth was not affected by the tightening of large exposure limits, it declined markedly following the tightening of measures targeting banks maturity mismatches.

8. Conclusions

This paper introduces the Macroprudential Policies Evaluation Database (MaPPED), a new data set on policies of a macroprudential nature in the 28 EU member states between 1995 and 2014. Compared to other existing data sets with a similar scope, the new data set provides for a significantly higher degree of comprehensiveness and cross-country comparability for a number of advanced economies. The latter has been achieved through extensive cross-checks and involvement of experts of national authorities in all 28 EU member states. Looking forward, the data set is envisaged to be regularly (bi-annually) updated with information on new macroprudential measures taken in the EU member states, extending the reach of MaPPED beyond 2014.

The newly collected data set makes an important contribution to the discussion on the effectiveness of different macroprudential instruments in addressing systemic risk. In particular, the descriptive analyses presented in this paper reveal that there has been significant variation in the use of instruments of a macroprudential nature both across EU countries and over time. Moreover, the analyses suggest that a share of instruments available in the present macroprudential toolbox, such as capital buffers, regulatory lending standards or liquidity caps, may have had an impact on credit to non-financial private sector in the EU. These early results confirm the validity of the newly collected data and highlight their usefulness for the empirical analysis of macroprudential policy-making. Most

importantly, they call on policy-makers and researchers to make use of the new data source in order to improve our understanding of macroprudential policy-making in the EU.

Overall, the new data set aims at facilitating macroprudential policy assessments in the form of case studies, cross-country comparisons, time-series and panel data analyses of the effectiveness of macroprudential policies. In particular, future research in this area could proceed in at least three ways. First, the new data set will allow for more detailed descriptive analyses of the use of different macroprudential instruments in order to better understand how different tools have been used across countries and over time, and which tools are typically used as complements or substitutes. Second, future research should use the new data to examine the determinants of macroprudential policy-making across EU countries in order to identify the economic, financial, political and institutional factors that may influence the use and selection of macroprudential instruments or that may constrain policy-makers in using them. Finally and most importantly, the new data set will allow for systematic analyses of the effectiveness of different macroprudential measures in addressing systemic risk and financial sector developments in the EU, which will provide policy-makers with much needed guidance on which instruments to use and when to apply them.

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10. Annex

10.1. Comparison of MaPPED with existing databases

Table A1: Overview of previous data sets on macroprudential policy actions.

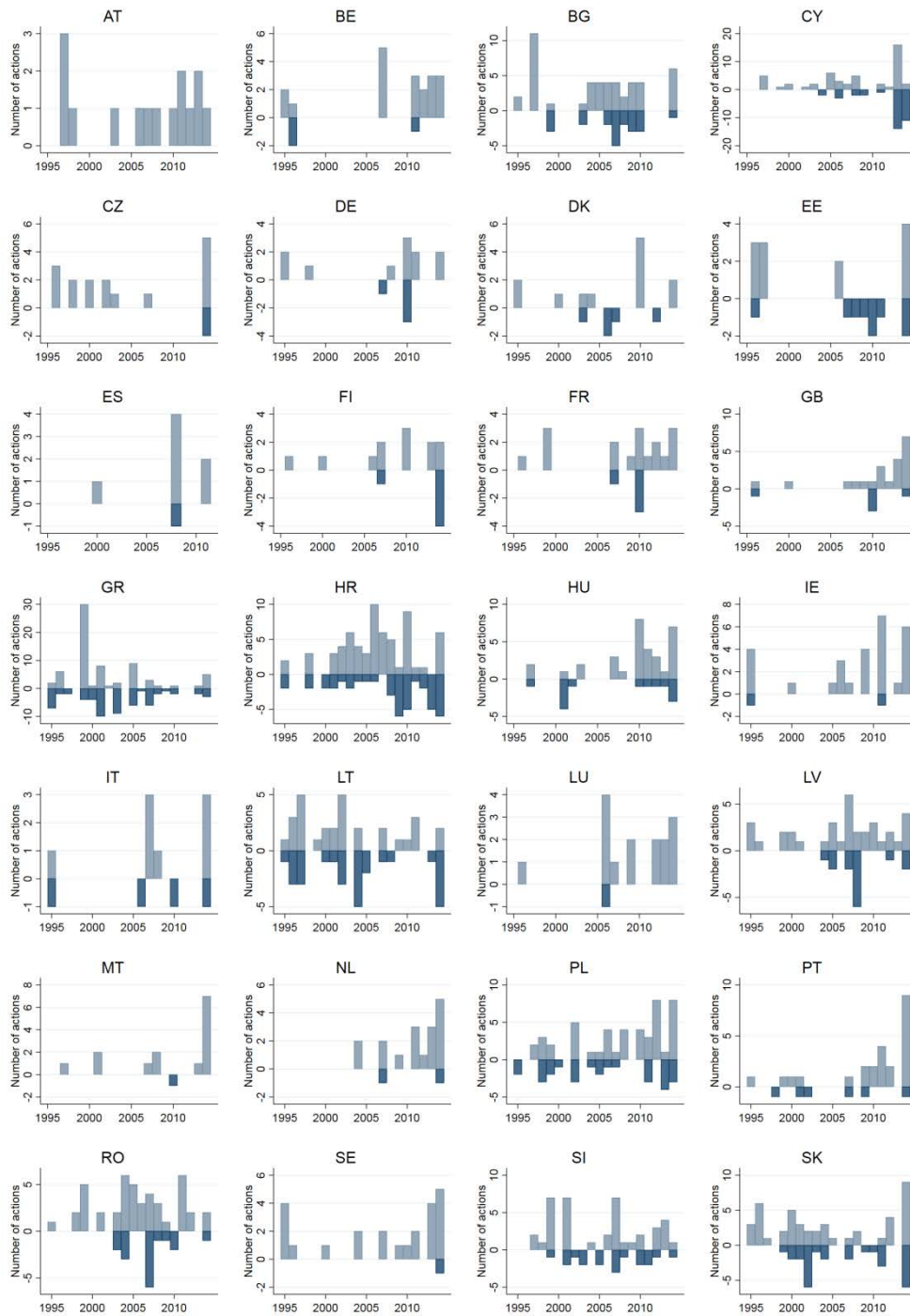
Category	Sub-Category	Borio & Shim (2007)	Lim et al. (2011)	Dell'Aricca et al. (2012)	Shim et al. (2013)	Cerutti et al. (2017a)	Akinci & Olmstead-Rumsey (2015)	Zhang and Zoli (2016)	Cerutti et al. (2017b)
1. Minimum capital requirements	1.1. Capital adequacy ratio (CAR)								•
	1.2. Tier 1 capital ratio								
	1.3. Common Equity Tier 1 capital ratio (CET 1)								
	1.4. Core Tier 1 capital ratio								
2. Capital buffers	2.1. Countercyclical capital buffer (CCyB)		•			•	•	•	
	2.2. Capital conservation buffer								
	2.3. Systemic risk buffer								
	2.4. G-SII capital buffer					•			
	2.5. O-SII capital buffer					•			
	2.6. Other capital requirement targeting most important institutions								
	2.7. Other capital surcharges and own funds requirements								
	2.8. Profit distribution restrictions		•				•	•	
3. Risk weights	3.1. Risk weights for loans backed by residential property	•			•		•	•	•
	3.2. Risk weights for loans backed by commercial property								•
	3.3. Other sectoral risk weights		• ¹						•
4. Leverage ratio					•				
5. Loan-loss provisioning	5.1. Loan classification rules	• ⁴							• ⁴
	5.2. Minimum specific provisioning	• ⁴			• ⁴				• ⁴
	5.3. General provisioning	• ⁴	• ²	• ²		• ²	• ²	• ²	
	5.4. Capital treatment of loan loss reserve								
6. Lending standards restrictions	6.1. Loan-to-value (LTV) limits	•	•	•	•	•	•	•	
	6.2. Loan-to-income (LTI) limits	•							
	6.3. Debt-to-income (DTI) limits		•	•	• ⁸	•	•	•	
	6.4. Debt-service-to-income (DSTI) limits (incl. interest rate stress testing)	•			•				
	6.5. Limits on interest rates on loans	•			• ⁸				
	6.6. Maturity and amortisation restrictions	•			• ⁸				
	6.7. Other income requirements for loan eligibility					• ⁵	•	•	
	6.8. Limits on the volume of personal loans						•	•	
	6.9. Other restrictions on lending standards					• ⁵		•	

Category	Sub-Category	Borio & Shim (2007)	Lim et al. (2011)	Dell'Aricca et al. (2012)	Shim et al. (2013)	Cerutti et al. (2017a)	Akinci & Olmstead-Rumsey (2015)	Zhang and Zoli (2016)	Cerutti et al. (2017b)
7. Limits on credit growth and volume	7.1. Reserve requirements related to banks' liabilities	●	●	●	●	●		●	●
	7.2. Asset-based reserve requirements	●	●	●	●	●	● ¹⁰	●	
8. Levy / Tax on financial institutions and activities	8.1. Tax on assets/liabilities					● ⁶			
	8.2 Tax on financial activities					● ⁶			
9. Limits on large exposures and concentration	9.1. Single client exposure limits			● ¹¹		●			●
	9.2. Intragroup exposure limits			● ¹¹		● ⁷			●
	9.3. Sector and market segment exposure limits	● ⁹		● ¹¹		● ⁷			●
	9.4. Funding concentration limits								
	9.5. Limits on qualified holdings outside the financial sector								
	9.6. Other exposure and concentration limits			● ¹¹	● ¹²				
10. Liquidity requirements and limits on currency mismatches	10.1. Loan-to-deposit (LTD) limits		● ³		● ³	● ³		● ³	
	10.2. Other stable funding requirements incl. Net Stable Funding Requirement (NSFR)		● ³		● ³	● ³		● ³	
	10.3. Short-term liquidity coverage ratios incl. Liquidity Coverage Ratio (LCR)		● ³		● ³	● ³		● ³	
	10.4. Liquidity ratios and deposit coverage ratios		● ³		● ³	● ³		● ³	
	10.5. Limits on FX mismatches		●			●		●	
	10.6. Other		● ³		● ³	● ³		● ³	
11. Other measures	11.1. Structural measures								
	11.2. Margin requirements								
	11.3. Other regulatory restrictions on financial activities								
	11.4. Limits on deposit rates								
	11.5. Debt resolution policies								
	11.6. Crisis management tools								
	11.7. Changes in regulatory framework								
	11.8. Other								
Sample		1990-2006	2000-2010	1998-2008*	1990-2012	2000-2013	2000-2013	2000-2013	2000-2014
EU countries		10	14	19*	28	24	28	15	25

Legend and notes: ● Included in the database. ● Partially included in the database. (1) "Caps on foreign currency lending" including higher risk weights on FX exposures; (2) "Time varying/Dynamic provisioning"; (3) Jointly referred to as "Limits on maturity mismatch", "Liquidity requirements" or "Liquidity tools" or "Liquidity" depending on the source; (4) Focusing on provisioning of loans for housing or to households, or on mortgage loans; (5) Limits on FX loans; (6) Levy/tax on financial institutions; (7) Limits on interbank exposures; (8) Jointly referred to as "Other lending restrictions"; (9) Related to the property market; (10) 'Ceilings on credit growth'; (11) Jointly referred to as "Exposure / credit concentration limits"; (12) Relates to exposures to the housing sector. * Estimate due to no exact information provided.

10.2. Descriptive statistics by country

Figure A1: Evolution of macroprudential policy stance in the EU member states between 1995 and 2014.



10.3. Codebook and coding rules

Table A2: List of attributes, response categories and questionnaire instructions.

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
GENERAL INFORMATION			
R.1	ID of the policy action		
A.1	Type of a tool - Category	Type of a policy tool	See Table A3 below
A.2	Type of a tool - Subcategory	Type of a policy tool	See Table A3 below
A.3	Description of a tool	Description of the tool including any important characteristics not captured elsewhere in the questionnaire.	
A.4	Type of a policy action	Type of policy action undertaken.	<p><i>Single choice</i> Select which applies:</p> <ol style="list-style-type: none"> 1. Activation of a new tool 2. Change in the level of an existing tool 3. Change in the scope of an existing tool⁷ 4. Deactivation of an existing tool 5. Maintaining the existing level and scope of a tool⁸
A.5	Strengthening / Loosening	The (intended) change in prudential policy stance triggered by the action.	<p><i>Single choice</i> Select which applies:</p> <ol style="list-style-type: none"> 1. Policy tightening 2. Policy loosening 3. Other (e.g. harmonisation of rules) and with ambiguous impact
A.6	Reciprocated measure	Is the action a reciprocation of a measure introduced in another jurisdiction? If "1. Yes", proceed to A.6.1 and A.6.2	<p><i>Single choice</i> Select which applies:</p> <ol style="list-style-type: none"> 1. Yes 2. No
A.6.1	Country code of the jurisdiction that introduced the reciprocated measure	<p><i>Applies to answer "1. Yes" in A.6.</i></p> <p>Indicate the country code of the jurisdiction that introduced the reciprocated measure. A country code list according to ISO 2-letter country standards is available under: https://www.iso.org/obp/ui/#search</p>	
R.6	ID of the original measure	<i>Applies to answer "1. Yes" in A.6.</i>	
B.1.Y	Announcement – Year	<p>The date when a law, regulation or recommendation becomes enacted, i.e. its final formulation and date of its entry into force is known to all affected parties. Depending on the level of legislation (primary, delegated act or recommendation), the following dates should be reported as the announcement date:</p> <p>(1) If known, the date of approval of the legislation (by parliament or</p>	<i>Date format (YYYY)</i> Please specify
B.1.Q	Announcement – Quarter		<i>Date format (Q)</i> Please specify
B.1.M	Announcement – Month		<i>Date format (M)</i> Please specify
B.1.D	Announcement – Day		<i>Date format (D)</i> Please specify

⁷ A change in the scope of an existing tool relates to measures where the calibration of the tool remains unchanged but a policy action modifies institutional coverage, or extends or narrows exposures to which the tool applies. Examples include: (i) the broadening of the base for calculation of capital requirements; (ii) the enlarged scope for DSTI regulations to include non-bank financial institutions; or (iii) increases in the scope to incorporate foreign liabilities.

⁸ Maintaining an existing tool applies to cases when, e.g., (i) a temporary measure has been prolonged; (ii) a policy tool is periodically reviewed (e.g. on the basis of CRR/CRD IV); or (iii) only the legal basis of a tool has been changed.

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
		<p>government); or if this is not known</p> <p>(2) the date of publication of the legislation in a government gazette; or</p> <p>(3) the date of publication of the legislation on government agencies' webpages; or if it is not published</p> <p>(4) the date of circulation of the legislation to affected parties.</p>	
B.2.Y	In force since – Year	<p>The date when a law, regulation or recommendation legally becomes effective. Commonly this date is stipulated directly in the law or regulation. When a certain threshold regarding capital or liquidity requirements and buffers has to be met before the date stipulated in the corresponding law, regulation or recommendation, this date should be treated as the date of entry into force.</p>	<i>Date format (YYYY)</i> Please specify
B.2.Q	In force since – Quarter		<i>Date format (Q)</i> Please specify
B.2.M	In force since – Month		<i>Date format (M)</i> Please specify
B.2.D	In force since – Day		<i>Date format (D)</i> Please specify
B.4	Envisaged duration	<p>The envisaged duration of a measure.</p> <p>For a deactivated measure select “Does not apply”.</p>	<p><i>Single choice</i> Select which applies:</p> <ol style="list-style-type: none"> 1. A measure with an indefinite duration 2. A measure with regularly revised calibration 3. A stage in the phase-in of a measure 4. A temporary measure with known duration 5. A temporary measure with unknown duration 6. Does not apply
B.4.1	Envisaged duration – additional information	<p><i>Applies to answers "2. A measure with regularly revised calibration", "3. A stage in the phase-in of a measure", and "4. A temporary measure with known duration" in B.4.</i></p> <p>For answer "2", specify the frequency of revisions (monthly, quarterly, annual); for answer "3", specify the duration of the phase-in stage; for answer "4", specify the date or the event (e.g. entry into force of a new legislation) when a measure will become deactivated.</p>	<i>Text</i>
R.2	Preceded by	<p><i>Does not apply for answer 1 (activation of a new tool) in A.4.</i></p> <p>Provide the ID of the last action related to the tool.</p>	
R.3	Followed by	<p><i>Does not apply for answer 4 (deactivation of an existing tool) in A.4.</i></p> <p>Provide the ID of the next action related to the tool.</p>	
R.4	Replaced by	<p>Only applies for answer 4 (deactivation of an existing tool) in A.4. Otherwise does not apply.</p> <p>Provide the ID of the newly introduced tool envisaged to replace the deactivated tool.</p>	
DESCRIPTION OF THE MEASURE			
Calibration			
C.1	Earlier level	<p><i>Does not apply to answer "1. Activation of a new tool" in A.4.</i></p> <p>Specify the earlier level(-s) of the instrument.</p>	<i>Text or numeric</i>
C.2	New level	<p><i>Does not apply to answer "4. Deactivation of an existing tool" in A.4.</i></p>	<i>Text or numeric</i>

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
		Specify the new level(-s) of the instrument.	
C.3	Type of a change in the scope of a tool	Does not apply to answer "4. Deactivation of an existing tool" in A.4. Specify other details of the present calibration of the tool following the policy action, e.g., modifications in institutional coverage or extensions of exposures to which the tool applies.	Text
C.4	Countercyclical design	Does the measure have a countercyclical design? A measure has a countercyclical design when: 1) its formula ensures that its level <u>automatically</u> tightens when systemic risks intensify and loosens when they fade, e.g. dynamic provisioning where the general provisioning coefficient increases in line with credit expansion; 2) its calibration is <u>regularly</u> (e.g. quarterly) <u>revised</u> along with the intensity of cyclical systemic risk, e.g. by linking the revisions of an instrument to the evolution of indicators of systemic risk (e.g. CCyB).	Single choice Select which applies: 1. Yes 2. No
Scope			
D.1	Sector	Types of financial institutions that are required to comply with the policy action (following ESA2010 classification). Response "1. Credit institutions" refers to undertakings whose business is to receive deposits or other repayable funds from the public and to grant credits for their own account. This includes amongst others commercial banks, corporate banks, savings banks, credit cooperatives, building societies, and banks specialised in mortgage lending (if they accept deposits). Response "4. Other financial corporations (different than credit institutions, other MFIs, insurance corporations and pension funds)" refers to credit providers that do not accept deposits, non-MMF investment funds, various types of brokers (like securities brokers), dealers, financial service consultants, investment advisers, private portfolio managers, market makers, payments institutions, electronic money institutions, financial leasing companies, managers of pension funds or mutual funds, trusts, estates, brass plate companies, and units providing financial services with own funds. In some countries, many of these other financial intermediaries are summarised under terms such as "investment firms" (e.g. in LU), "financial enterprises" (e.g. in HU) or "financial services institutions" (e.g. in DE).	Multiple choice Select all that apply: 1. Credit institutions ⁹ 2. Money market funds (MMF) ¹⁰ 3. Insurance corporations or pension funds ¹¹ 4. Other financial corporations (different than credit institutions, other MFIs, insurance corporations and pension funds) ¹²
D.1.1	Sector – additional information	Supplementary information to question D.1.	Text
D.2	Consolidation basis of institutions	At what consolidation level does the instrument apply?	Multiple choice Select all that apply: 1. Consolidated basis

⁹ Corresponding to S.122 of ESA2010.

¹⁰ Corresponding to S.123 of ESA2010.

¹¹ Corresponding to S.128 and S.129 of ESA2010.

¹² Corresponding to S.124, S.125, S.126 and S.127 of ESA2010.

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
			<ul style="list-style-type: none"> 2. Sub-consolidated basis 3. Solo basis 4. Does not apply
D.3	Legal status of institutions	Legal form of resident financial institutions that have to comply with the regulation. For measures that apply to all institutions providing services in a jurisdiction, please select all types of institutions.	<p><i>Multiple choice</i> Select all that apply:</p> <ul style="list-style-type: none"> 1. Institutions headquartered domestically 2. Subsidiaries of institutions headquartered in another EU country 3. Branches of institutions headquartered in another EU country 4. Subsidiaries of institutions headquartered in a non-EU country 5. Branches of institutions headquartered in a non-EU country 6. Does not apply
D.3.1	Institutions – additional information	Supplementary information to question D.3.	<i>Text</i>
D.4	Selection criteria	<p>Does a measure apply only to a specific sub-group of institutions in the sector (i.e. sectors pointed at in field D.1)?</p> <p>If a measure applies to all institutions select “1. Does not apply”.</p>	<p><i>Multiple choice</i> Select all that apply:</p> <ul style="list-style-type: none"> 1. Does not apply 2. Systemically important or large 3. Not systemically important or small 4. Applying internal rating-based (IRB) approach 5. Applying standardised approach (SA) 6. Listed at stock exchange 7. Not listed at stock exchange 8. Other differentiation within the sector
D.4.1	Selection criteria – Other	Text field for answer “Other differentiation within the sector” in field D.4 or any supplementary information for other answers.	<i>Text</i>
D.5	Market segment	<p>Balance sheet items targeted by a measure.</p> <p>If “1. General measure” is selected, none of the other response categories should be selected.</p>	<p><i>Multiple choice</i> Select all that apply:</p> <ul style="list-style-type: none"> 1. General 2. Exposures to financial corporations (incl. credit institutions) 3. Exposures backed by commercial real estate (CRE) 4. Other loans to non-financial corporations 5. Other exposures to non-financial corporations 6. Exposures backed by residential real estate (RRE) 7. Consumer loans (incl. car loans and personal loans for durable goods and services) 8. Exposures to government 9. Other
D.5.1	Market segment – Other	Text field for answer “8. Other” in D.5 or any supplementary information for other answers.	<i>Text</i>
D.6	Currency	The currency of denomination of instruments/activities targeted by the measure. If the measure applies irrespectively of the currency of denomination, select both options.	<p><i>Multiple choice</i> Select all that apply:</p> <ul style="list-style-type: none"> 1. Domestic-currency targeted measures 2. Foreign-currency targeted measures
D.6.1	Foreign currency – additional information	Text field for answer “2. Foreign-currency targeted measures” in D.6. Additional information on the targeted currencies and whether a measure applies to instruments in foreign currencies or indexed to foreign currencies.	<i>Text</i>
D.7	Domestic vs foreign exposure	<p>Domestic exposures are understood as exposures to counterparties resident in a member state irrespectively of the currency of the contract. Foreign exposures are defined as exposures to counterparties not resident in the member state.</p> <p>In case a measure applies to any type of exposures, both domestic and foreign</p>	<p><i>Multiple choice</i> Select all that apply:</p> <ul style="list-style-type: none"> 1. Domestic exposures 2. Foreign exposures

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
		exposures should be selected.	
D.7.1	Foreign exposure – additional information	Text field for answer “2. Foreign exposures” in D.7. Additional information on the targeted exposures.	Text
Underlying regulation			
E.1	General regulation underlying the design of an instrument	<p>The initial regulation which specifies the design of an applied policy instrument.</p> <p>If an instrument has been included in CRDIV or other EU directives, which have been transposed into national law without exercising the relevant national discretion option, select “2. Transposition of CRDIV” or “4. Transposition of other directives incl. CRDI-III” (whichever applies). If significant national discretion was exercised, select also “5. National regulation or recommendation”. If a tool is largely country-specific, only the latter option should be chosen.</p>	<p><i>Multiple choice</i> Select all that apply:</p> <ol style="list-style-type: none"> 1. CRR 2. Transposition of CRDIV 3. Basel III (if different than CRDIV/CRR) 4. Transposition of other directives incl. CRDI-III (and Basel I-II), or other EU/SSM regulations and recommendations 5. National regulation or recommendation
E.2	Legal character	<p>Is a measure legally binding?</p> <p>A legally binding measure is commonly introduced via a legislative act, central bank regulation or decree, and breaching it often involves the imposition of fines or undertaking administrative procedures (incl. withdrawal of licence). Recommendations and guidelines are commonly issued on a comply-or-explain basis, though they may enter the criteria used in on-site inspections and setting of Pillar II requirements.</p>	<p><i>Multiple choice</i> Select which applies:</p> <ol style="list-style-type: none"> 1. Legally binding 2. Recommendation or guidance
E.3	Consequences of non-compliance	<p>Please indicate the consequences of non-compliance with a measure for a financial institution.</p> <p>The following list provides examples to be included in each of the categories:</p> <ol style="list-style-type: none"> 1) Does not apply: no consequences of non-compliance 2) Comply or explain, warning, reprimand: soft measures which do not yet impose sanctions but may have reputational effects 3) Additional reporting requirements: submission of action plan for compliance, additional on-site inspections, additional prudential reporting requirements, etc. 4) Non-monetary sanctions and restrictions on activities: restrictions on current and new activities, restrictions on distribution of capital, imposition of more stringent prudential limits and requirements, replacement of directors, revocation of licenses, etc. 5) Penalties, fines: monetary sanctions 6) Other 	<p><i>Multiple choice</i> Select all that apply:</p> <ol style="list-style-type: none"> 1. Does not apply (no consequences) 2. Comply or explain, warning, reprimand 3. Additional reporting requirements 4. Non-monetary sanctions and restrictions on activities 5. Fines, penalties 6. Other
E.3.1	Consequences of non-compliance – Other	Text field for answer “6. Other” in E.3 or any supplementary information for other answers.	Text
E.4	Legal basis	Title of the legal or customary act serving as a basis for the introduction of a measure.	Text
E.5	Name of the issuing authority	Name of authority issuing the regulation, decision or recommendation.	Text
E.6	Type of issuing authority	<p>Type of the authority issuing the regulation, decision or recommendation.</p> <p>If the measure was based on a law that was further specified by e.g. a central bank</p>	<p><i>Multiple choice</i> Select all that apply:</p> <ol style="list-style-type: none"> 1. Central bank 2. Financial supervisory authority, if other than central bank

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
		directive or other regulation, select both "4. Parliament" and "1. Central bank". Option "6. EU institution if no transposition required" may be used for regulations issued by the Council and the European Parliament or for recommendations by the ESRB that are directly applicable in member states.	<ol style="list-style-type: none"> 3. Macroprudential Committee 4. Parliament 5. Government ministry 6. EU institution if no transposition required 7. Self-regulation by the sector 8. Other
E.6.1	Type of the issuing authority – Other	Text field for answer "8. Other" in field F.5 or any supplementary information to field F.5.	Text
E.7	Intended reciprocity	Was a measure requested to be recognised by other national authorities (within reciprocity or cross-border supervisory cooperation)?	<i>Single choice</i> Select which applies: <ol style="list-style-type: none"> 1. Mandatory reciprocity 2. Optional reciprocity: requested and recognised 3. Optional reciprocity: requested and not recognised 4. Optional reciprocity: not requested 5. Does not apply
E.8	Reasons for reciprocity	<i>Applies only for answers "2", "3", and "4" in E.7, i.e. where reciprocity was optional. Otherwise leave the field blank.</i> Stipulate the reasons for requesting or not requesting the reciprocation of the measure.	Text
E.9	Reciprocity – Outcome	<i>Applies only for answers "2" and "3" in E.7, i.e. where reciprocity was optional and requested. Otherwise leave the field blank.</i> Describe the outcome of the reciprocation request.	Text
Objective			
F.1	Main character of a policy action	Does the measure have a macro- or microprudential character?	<i>Multiple choice</i> Select all that apply: <ol style="list-style-type: none"> 1. Macroprudential 2. Microprudential 3. Other
F.1.1	Other character of a policy action – Yes	<i>Applies for answer "3. Other" in F.1. Otherwise leave blank.</i>	Text
F.2	The objective of a measure	Specific objective, which the measure is intended to achieve or the risk the measure is intended to address.	<i>Multiple choice</i> Select all that apply: <ol style="list-style-type: none"> 1. General credit growth 2. Sectoral credit growth 3. Bank leverage 4. Household leverage 5. Developments in asset prices 6. Market liquidity 7. Maturity mismatches on banks' balance sheets 8. Currency risks 9. Interconnectedness/and contagion risks 10. Exposure concentration 11. Level playing field / competition 12. Other addressing the resilience of the financial system 13. Bank-level oversight (microprudential) 14. Harmonisation 15. Other
F.2.1	The objective of the measure - Other	Text field for answer "15. Other" in F.2 or for a more detailed description of the objective.	Text
F.3	Target outcomes	Optional: what outcomes are expected from the action?	Text
F.4	Indicators	Optional: which indicators have been used to identify the relevant risk, or the appropriateness of the existing calibration of the measure?	Text
F.5	Other policy actions	Has a policy action been taken in tandem with another action, so that their impact	<i>Single choice</i> Select which applies:

ID	Attribute name	Definition of attribute and questionnaire instructions	Response categories
		<p>should be assessed jointly, i.e. they constitute a congruent policy package?</p> <p>Examples: (i) a set of minimum capital requirements in CRR (CET1, Tier 1 and CAR capital ratios) can be considered as a policy package; (ii) the above set of capital requirements and the provisions of CRR regarding exposure limits should be considered separately.</p>	<ol style="list-style-type: none"> 1. Yes 2. No
F.5.1	Other policy actions – if not included in the questionnaire	<p><i>Applies for answer "1. Yes" F.5. Otherwise leave blank.</i></p> <p>Provide a description of the action(-s) referred to in F.5. and the tools applied. If the action(-s) is already described elsewhere in the questionnaire use the next field.</p>	Text
R.5	Other policy actions if included in the questionnaire – ID	<p><i>Applies for answer "1. Yes" F.5. Otherwise leave blank.</i></p> <p>Specify the ID of the action(-s) referred to in F.5 if already assigned in the questionnaire.</p>	Text
F.6	Leakages	<p>Please specify whether there have been any leakages after the introduction of the measure.</p> <p>Note that "1. Does not apply" should be used for the deactivation of a measure. "No assessment available" may be selected if no information on leakages is (yet) available.</p>	<p><i>Multiple choice</i> Select all that apply:</p> <ol style="list-style-type: none"> 1. Does not apply 2. No assessment available 3. Shifting risk across border / to parent foreign financial institution 4. Shifting risk domestically off the balance sheet 5. Shifting risks domestically to unregulated bank-like institutions 6. Shifting risk domestically to non-banking institutions 7. Introduction of new products 8. Other
F.6.1	Leakages - Other	Text field for answer "8. Other" in field F.6 or any supplementary for other answers.	Text
F.7	Other	Any other relevant characteristics of a policy action not explained above.	Text
SOURCE			
G.1	Additional information available under		Text (and if available URL link to the document)
G.2.	Source of the entry		Text

Table A3: Categorisation of policy tools and description of categories (see questions A.1 and A.2 in Table A2).

Category	Sub-Category	Description
1. Minimum capital requirements	1.1. Capital adequacy ratio (CAR)	Own funds as a percentage of risk weighted assets. The category includes mostly microprudential Pillar I gone-concern capital requirements.
	1.2. Tier 1 capital ratio	
	1.3. Common Equity Tier 1 capital ratio (CET 1)	
	1.4. Core Tier 1 capital ratio	
2. Capital buffers	2.1. Countercyclical capital buffer (CCyB)	The countercyclical capital buffer, as defined in Article 130, 135-140 CRD .
	2.2. Capital conservation buffer	The capital conservation buffer, as referred to in Article 458 CRR .
	2.3. Systemic risk buffer	The systemic risk buffer, as defined in Article 133-134 CRD .
	2.4. G-SII capital buffer	
	2.5. O-SII capital buffer	The O-SII buffer, as defined in Article 131 CRD (Basel III on SIFIs).
	2.6. Other capital requirements targeting most important institutions	Other capital surcharges on most important institutions. These can include Pillar II requirements or additional capital guidelines targeting only most important institutions, capital buffers resulting from stress-test type of exercises and covering selectively important banks.
	2.7. Other capital surcharges and own funds requirements	E.g. Pillar 2 capital add-ons other than in 2.5, capital surcharges on excessive trading activities; capital surcharges on large internationally active banks; capital add-ons to account for risks stemming from foreign currency-denominated exposures; additional capital requirements for banks with business models focused on serving non-residents, etc. (This category should not include the uniform provisions under ICAAP and SREP that are implemented in all EU countries and based on common EBA guidelines.)
	2.8. Profit distribution restrictions	Restrictions on the distribution of profits that are typically calibrated depending on the amount of minimum capital an entity has available.
3. Risk weights	3.1. Risk weights for loans backed by residential property	Calibration of risk weights for loans backed by residential property under the Standardised Approach, or regulatory requirements regarding LGD and PDs of these loans under IRB approach.
	3.2. Risk weights for loans backed by commercial property	Calibration of risk weights for loans backed by commercial property under the Standardised Approach, or regulatory requirements regarding LGD and PDs of these loans under IRB approach.
	3.3. Other sectoral risk weights	Calibration of risk weights for exposures other than to residential or commercial real estate, such as retail exposures, FX exposures, exposures to unhedged borrowers, direct exposures to regional or local authorities, or exposures guaranteed by regional or local authorities.
4. Leverage ratio		Any ratio limiting the leverage of a financial institution, i.e. introducing a cap on the amount of its total assets in relation to its equity. This category includes, but is not limited to, the application of a recent macro-prudential leverage ratio as proposed by Basel III.
5. Loan-loss provisioning	5.1. Loan classification rules	Regulatory definitions and classification of impaired loans and loan risk categories, if relevant for loan-loss provisioning purposes (and not only for reporting purposes). E.g. classification of loans into categories such as standard, standard special mention, substandard, doubtful and loss.
	5.2. Minimum specific provisioning	Regulatory minima on the level of provisioning for loans with different loss probability (provisioning coefficients). E.g. standard - 0%, standard special mention - 0%, substandard - 20%, doubtful - 40% and loss - 100%.

Category	Sub-Category	Description
	5.3. General provisioning	Statistical and other general loan-loss provisioning rules.
	5.4. Capital treatment of loan loss reserve	Regulations concerning treatment of provisions in the regulatory capital.
6. Lending standards restrictions	6.1. Loan-to-value (LTV) limits	LTV limits restrict the size of loans relative to the value of the underlying collateral. The LTV cap generally applies at the time of the loan origination and includes also down-payment requirements. The calibration of LTVs can also take into account factors other than the value of the collateral.
	6.3. Loan-to-income (LTI) limits	LTI limits restrict the size of a loan to a fixed multiple of income.
	6.3. Debt-to-income (DTI) limits	DTI limits restrict the size of total household debt to a fixed multiple of the borrowers' income (or to similar income measures such as income less the average national wage).
	6.4. Debt-service-to-income (DSTI) limits (incl. interest rate stress testing)	DSTI limits restrict the size of total debt service payments (including interest rate payments) to a fixed multiple of household income or, in some cases, to a fixed multiple of household income less household expenditure. The subcategory includes also criteria based on stress-testing factors such as interest rate risk and foreign exchange risks which impact maximum household indebtedness level.
	6.5. Limits on interest rates on loans	Caps or additional restrictions on interest rate setting for private sector borrowers.
	6.6. Maturity and amortisation restrictions	Maximum maturity restrictions (e.g. maximum maturity of mortgages set to 30 years) or regulations concerning loan amortisation periods.
	6.7. Other income requirements for loan eligibility	Income based criteria of creditworthiness such as minimum disposable income, permanent source of income in the currency of a loan.
	6.8. Limits on the volume of personal loans	
	6.9. Other restrictions on lending standards	
7. Limits on credit growth and volume	7.1. Reserve requirements related to banks' liabilities	Reserve requirements are the amount of funds that a depository institution must hold in reserve against specified deposit liabilities. These required reserves are normally in the form of deposits made with a central bank, or cash stored physically in the bank vault (vault cash).
	7.2. Asset-based reserve requirements	E.g. requirements for banks whose credit growth exceeds a certain limit per annum (or per quarter) to invest in low-yield central bank bills; obligations to set up custody accounts for non-resident portfolio investors; or compulsory purchases by banks of central bank bills when the growth or volume of loans exceeds a specified threshold, e.g. marginal reserve requirements.
8. Levy / Tax on financial institutions and activities	8.1. Tax on assets/liabilities	A levy or tax on specific assets or liabilities, including those on (large) systematically important financial institutions.
	8.2 Tax on financial activities	A levy or tax on specific financial transactions such as stock purchases, real estate transactions, high-frequency trading or naked sovereign credit default swaps.
9. Limits on large exposures and concentration	9.1. Single client exposure limits	Large exposure limits to clients or a group of connected clients (as in Article 395 CRR) excluding those to a parent or related undertaking.
	9.2. Intragroup exposure limits	Large exposure limits to clients, which are parent or other related undertakings.
	9.3. Sector and market segment exposure limits	Limits which put a ceiling on exposures to particular sectors or asset classes, e.g., mortgage credit to households; exposure limits to other banks, investment firms, insurers, a range of investment funds and other regulated and unregulated financial institutions; general exposure limits for all interbank exposures.
	9.4. Funding concentration limits	

Category	Sub-Category	Description
	9.5. Limits on qualified holdings outside the financial sector	
	9.6. Other exposure and concentration limits	
10. Liquidity requirements and limits on currency mismatches	10.1. Loan-to-deposit (LTD) limits	Limits on the volume of loans expressed in reference to bank's stable funds, including deposits and securities issued. These limits may be accompanied by additional reporting requirements for banks exceeding the reference ratio.
	10.2. Other stable funding requirements incl. Net Stable Funding Requirement (NSFR)	Limits aimed at curbing maturity mismatches, by preventing an over-reliance on short-term liabilities to finance longer-term assets. Include NSFR defined by Article 412 CRR or limits on long-term or illiquid assets in relation to stable funds.
	10.3. Short-term liquidity coverage ratios incl. Liquidity Coverage Ratio (LCR)	Limits aimed at curbing maturity mismatches, by ensuring availability of short-term liabilities (liquidity inflows) to cover short-term commitments (liquidity outflows). Include LCR as defined by Article 413 CRR . These include 'maturity ladders' i.e. liquidity mismatch ratios between assets and liabilities for different time horizons, ranging from the "sight to 7 days" to "the sight to 1 month".
	10.4. Liquidity ratios and deposit coverage ratios	Requirement for banks to maintain a minimum ratio of liquid assets to total assets (liquidity ratios) or borrowings, incl. deposit coverage ratios.
	10.5. Limits on FX mismatches	Limits on net open FX positions incl. limits on the FX exposure of a bank relative to its capital.
	10.6. Other	E.g. introduction of qualitative requirements for the management of liquidity or FX risks; additional reporting requirements of banks' liquidity or FX positions.
11. Other measures	11.1. Structural measures	Structural measures such as measures based on the Volcker rule, the Vickers report or the Liikanen report that aim at reducing the complexity or size of financial institutions.
	11.2. Margin requirements	Requirements on margins / haircuts on collateralised financial transactions. Includes restrictions on credit for the purchase of equities, by individuals and legal entities.
	11.3. Other regulatory restrictions on financial activities	E.g. restrictions on short selling or securitisation of assets.
	11.4. Limits on deposit rates	Regulatory ceilings or recommended caps on deposit rates. Including caps imposed as own fund requirements for banks trespassing the thresholds.
	11.5. Debt resolution policies	
	11.6. Crisis management tools	Internal and external capital controls.
	11.7. Changes in regulatory framework	Regulatory solutions e.g. resolution policies, or the creation of new supervisory institutions.
	11.8. Other	Other measures not covered by the listed categories. This category includes e.g. the adoption of new accounting standards with a likely impact on the overall functioning of the banking sector, measures related to deposit guarantee scheme.

Acknowledgements

The views expressed in this paper are those of the authors and do not necessarily reflect those of the European Central Bank. We would like to thank Eóin Thomas Flaherty, Martina Jasova and Raluca Maran for their crucial role in building MaPPED, as well all contributors to the data collection exercise, in particular Marc Marechal, Michel Colinet, Jürgen Janssens, Nicolas Staner and Guy Van Den Eynde (Nationale Bank van België / Banque nationale de Belgique), Mihail Mihaylov, Nikolay Yolov, Silvia Prokopieva and Viliyana Novoselska (Bulgarian National Bank), Lukáš Pfeifer, Libor Holub (Česká národní banka), Ianna Georgieva Yordanova and Morten Niels Haastrup (Danmarks Nationalbank), Christian Glebe (Deutsche Bundesbank), Jana Kask (Eesti Pank), Niamh Hallissey, Conor Kelly, Jean Quin, Geraldine McWeeney, Maria Woods (Central Bank of Ireland / Banc Ceannais na hÉireann), Maria Vergeti, Spiros Pantelias, Ioannis Tsikripis, Konstantinos Zavantis, Konstantinos Kanellopoulos, Nikos Stavrianou, Ekaterini Korbi (Bank of Greece), Clara González and Francisco Javier Mencia Gonzalez (Banco de España), Anne-Laure Kaminski, Jean-Luc Thevenon, Sébastien Diot (L'Autorité de contrôle prudentiel et de résolution), Mirna Dumcic, Ivana Martinjak, Ksenija Gogic, Ana Martinis (Hrvatska Narodna Banka), Marianna Caccavaio (Banca d'Italia), Jelena Zubkova, Alexia Joanne Yiangou, Akos Marios Filippou and Constantinos Trikoupis (Central Bank of Cyprus), Arnis Jankovskis, Velga Vilne and Dace Antuza (Latvijas Banka), Tomas Reichenbachas, Mantas Mendelevičius and Agnė Bukavickaitė (Lietuvos Bankas), Vania Tinoco Pereira and Michael Rademacher (Commission de Surveillance du Secteur Financier), Tamás Borkó, Ágnes Tőrös and Gyöngyvér Szakál (Magyar Nemzeti Bank), Raniero Polidano (Central Bank of Malta / Bank Ċentrali ta' Malta), Rob Nijskens, Shahin Kamalodin, Remco van der Molen, Gera Kiewiet, Koen Holtring, Cees Rensen, Dan Alexandru, Peter Wierds and Jon Frost (De Nederlandsche Bank), Roland Salomon (Oesterreichische Finanzmarktaufsicht), Jeremiasz Nowakowski, Krzysztof Gajewski, Anna Nowak, Piotr Bańbuła (Narodowy Bank Polski), Diana Vieira and Vítor Oliveira (Banco de Portugal), Anca Diniță, George Popescu, Marian Cașcaval, Petruța Elena Istrate Petruța Elena, Anca Tudor, Irina Bălașa (Banca Națională a României), Meta Ahtik, Karmen Berdnik, Tibor Hren, Damjana Hudnik Drmaž, Damjana Iglič, Lidija Janevska, Helena Kastelic, Karmen Kunčič, Martina Erika Markelj, Saša Rubin (Banka Slovenije), Pavol Jurca (Národná banka Slovenska), Sampo Alhonsuo, Juha Savela, Tülin Bedretdin, Jan Nokkala, Peik Granlund (Suomen Pankki), Staff of the Swedish FSA (Finansinspektionen), Christine Boykiw, Marc Hinterschweiger, Gurmaj Dhillon, Lynnette Withfield (Bank of England).

Katarzyna Budnik

European Central Bank, Frankfurt am Main, Germany; email: katarzyna.budnik@ecb.europa.eu

Johannes Kleibl

European Central Bank, Frankfurt am Main, Germany; email: johannes.kleibl@ecb.europa.eu

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Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

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ISSN	1725-2806 (pdf)	DOI	10.2866/875405 (pdf)
ISBN	978-92-899-3228-8 (pdf)	EU catalogue No	QB-AR-18-003-EN-N (pdf)