Special Feature C: Framework for assessing cross-border spillover effects of macroprudential policy measures[22]

C.1 Introduction

Macroprudential measures implemented by national authorities may have cross-border repercussions. Macroprudential policy measures within the EU are generally designed to address specific, systemic, financial stability risks in national jurisdictions, including those stemming from specific sectors or even individual financial institutions.

Macroprudential policy cross-border spillovers are often positive as they increase the resilience of the financial sector, thus reducing the impact of systemic crises. Macroprudential policy targets the resilience of the financial sector and contributes to macroeconomic stability by containing credit booms and by reducing the impact of shocks on the provision of credit to the economy. By reducing vulnerabilities and building resilience, macroprudential policy reduces the probability of the emergence of systemic crises in the domestic economy which, if they were to materialise, could also have negative implications for foreign countries through trade and financial linkages.

However, domestic macroprudential policies may also have unintended cross-border effects. Due to substantial cross-border financial intermediation activities within the EU financial system and beyond, a macroprudential policy that targets the activity of domestic financial institutions will often entail reactions owing to regulatory arbitrage and risk management decisions of foreign financial institutions and/or domestic institutions operating abroad, which may in turn have implications for broader trade and economic activities. Some of these responses may give rise to unintended consequences through excessive reductions in financial intermediation and/or circumvention of the policy measures via leakages to institutions not targeted by the policy.

Policy instruments should therefore be designed to reap the benefits of positive spillovers in terms of enhanced financial stability, while also seeking to limit potential negative spillovers. Ensuring effectiveness and consistency of macroprudential policy in the EU requires policymakers to give due consideration to the cross-border effects of macroprudential policy measures adopted by national authorities and to take into account other countries' macroprudential settings when adopting their own macroprudential policies, or when warranted, to adopt suitable reciprocating macroprudential policy measures.[23]

This special feature presents a newly-developed framework for the use of national authorities in the EU to assess the cross-border spillover effects of macroprudential measures. To ensure that considerations on cross-border spillover effects are based on consistent

[22] Prepared by Christoffer Kok (ECB). The special feature is based on the work of the Eurosystem Financial Stability Committee's Task Force on Spillover Effects of macroprudential measures (TFSE). The TFSE was constituted in so-called extended composition format, implying that all EU member states (and not only those within the Banking Union) were represented, including the ESRB Secretariat. The TFSE was co-chaired by Christoffer Kok (ECB) and Dennis Reinhardt (Bank of England).

[23] As stipulated in **Recommendation ESRB/2015/2**.

analytical approaches across the EU countries, the Eurosystem Financial Stability Committee's (FSC) Task Force on Spillover Effects (TFSE) has devised a best practice framework for the analysis and assessment of cross-border spillover effects resulting from the activation of national macroprudential measures.[24] The framework is meant to serve as a starting point for national designated authorities (NDAs) and national competent authorities (NCAs) when assessing and monitoring cross-border spillover effects in the context of activations of macroprudential measures.[25] While the harmonised framework should serve as a starting point, NDAs/NCAs may want to employ complementary analytical tools tailored to country-specific circumstances. Finally, the proposed framework should help inform deliberations on cross-border spillover effects and reciprocity agreements at the EU-wide level under the ESRB umbrella.

This special feature is structured as follows. First, some concepts of the main cross-border transmission channels will be described. Second, the FSC framework will be described, focusing on the extensive recommended Indicator List and then on the so-called Empirical Benchmark tool. Third, some considerations on existing reciprocity arrangements are presented.

C.2 Concepts

Macroprudential measures may induce cross-border spillover effects through a variety of transmission channels. The starting point of the conceptual framework presented in this special feature is Chapter 11 of the ESRB Handbook. Accordingly, it follows the same definitions of cross-border spillover effects. Hence, a country activating a macroprudential policy is referred to as the domestic economy (country d), and other countries which are potentially affected by the policy are referred to as foreign economies (country f).

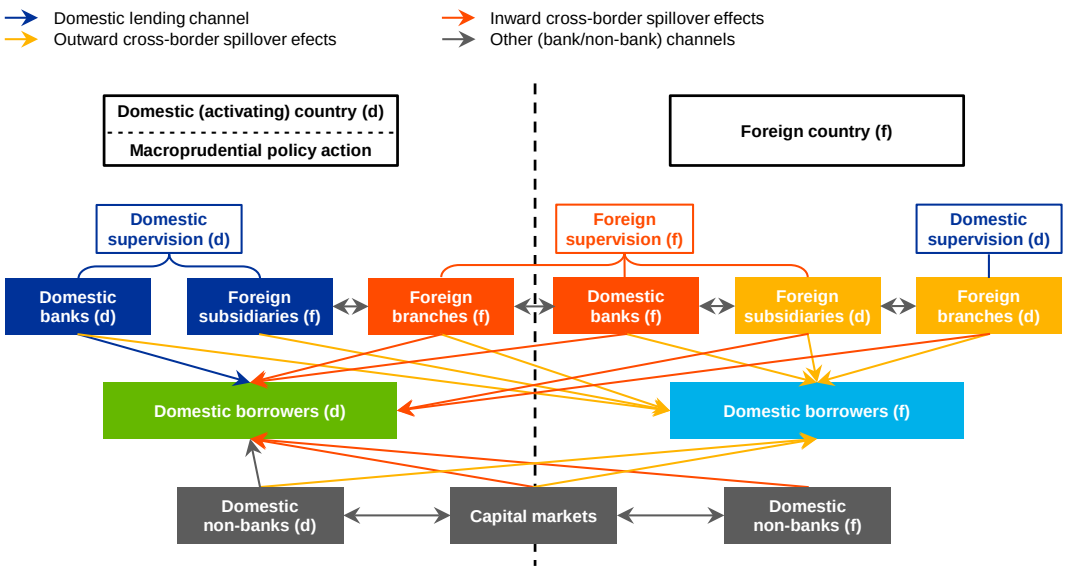
Cross-border spillover effects can be channelled through: (i) an "inward" transmission channel; and (ii) an "outward" transmission channel. Inward and outward cross-border spillover effects refer to the direction in which domestic macroprudential policies interact with foreign economies and institutions. Figure C.1 provides a highly stylised picture of the different transmission channels and the main types of institutions involved.

[24] The FSC framework is explained in more detail in "**Framework to assess cross-border spillover effects of macroprudential policies**", Financial Stability Committee, ECB, April 2020. The report is accompanied by a more extensive paper surveying the literature on cross-border spillovers and national practices in assessing those within the EU; see Kok, C. and Reinhardt, D. (eds.), "Cross-border spillover effects of macroprudential policies: A conceptual framework", *Occasional Paper Series*, ECB, forthcoming. The FSC Task Force worked in close collaboration with the relevant ESRB fora.

[25] The framework focuses on the cross-border spillover effects arising due to activated macroprudential measures. Accordingly, it does not explicitly consider systemic risk spillover effects from domestic financial systems to other countries due to macroprudential policy inaction by domestic authorities.

Figure C.1

Main transmission channels of cross-border spillover effects



Source: "Framework to assess cross-border spillovers of macroprudential policies", Financial Stability Committee, ECB, March 2020.

Inward transmission of cross-border spillover effects refers to the effects of domestic macroprudential policies on the domestic economy (d) related to the actions of entities headquartered in foreign economies (f). The inward transmission of domestic macroprudential policy describes how domestic regulation affects foreign affiliates (bank branches or subsidiaries) located in the domestic country, e.g. through "leakages" or "waterbed" effects, whereby activities migrate to entities not covered by the macroprudential measure. It also describes how domestic regulation affects the direct cross-border activity of foreign institutions in the domestic market. Thus, inward transmission of cross-border spillovers may occasionally reflect circumvention of the targeted national macroprudential measure and may render it less effective.

Outward transmission of cross-border spillover effects refers to the effects of domestic policies (d) on other foreign economies (f) and also, from the opposite perspective, the effect of foreign policies (f) on the domestic economy (d). The outward transmission of domestic macroprudential policy is related, but not restricted to, the international activities of domestic banking groups. Unintended outward effects of a policy may be channelled through the subsidiaries and branches of domestic banking groups operating in a foreign country or direct cross-border lending, or more indirectly through the impact on real activity and involving international trade channels.

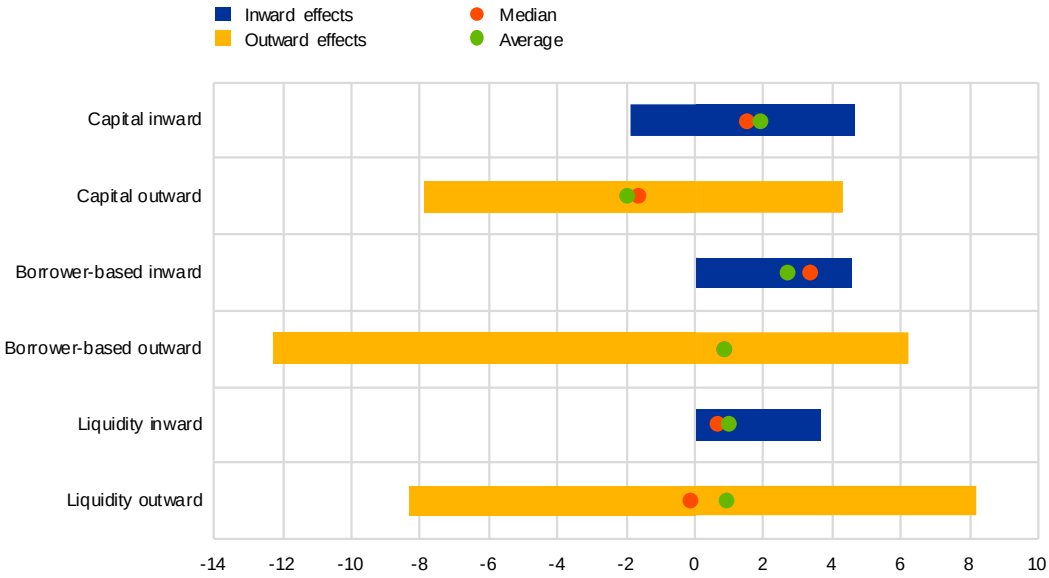
Findings from the empirical literature suggest that cross-border spillover effects can be meaningful. Although the evidence is somewhat mixed, in general it suggests that both inward and outward spillovers can be material (see Chart C.1). The magnitude and direction of the effects are nevertheless found to depend on the specific circumstances. In terms of inward spillovers, there is relatively solid evidence of the presence of leakages of domestic macroprudential measures, particularly through foreign branches not covered by the implementation of domestic policy. This provides a solid case for setting up policy reciprocity frameworks among highly integrated economies and financial systems, such as the EU. Outward spillover effects are also found to be present in most studies, with the effects on lending varying across instruments, bank balance sheet

characteristics and the nature of banks' relationships abroad (e.g. whether it is a core part of their business or more like an ancillary business line).

Chart C.1

Cross-border spillover effects according to the empirical literature across different transmission channels and macroprudential instruments

(loan growth in percentage points following a policy action or 1 p.p. increase in the policy instrument)



Source: "Framework to assess cross-border spillovers of macroprudential policies", Financial Stability Committee, ECB, February 2020.

Focusing on retail lending activity, material cross-border activity tends to be concentrated in specific areas of the EU. As regards retail lending by banks, most EU countries' banking sectors tend to have a strong home bias. In certain EU regions, however, strong cross-border activity has been observed through either bank ownership or exposures, such as among the Baltic and Nordic states, France and the Benelux countries, between Greece and Cyprus, Spain and Portugal, the UK and Ireland, and between Austria and many central and eastern European countries (see Table C.1).

Table C.1

Matrix of cross-border credit provision among EU countries (share of total credit in country column of banks in the sample from country row)

From\To	AT	BE	CY	DE	EE	ES	FI	FR	GR	IE	IT	LT	LU	LV	MT	NL	PT	SI	SK	UK	SE	PL
AT	74.64	0.25	1.83	0.84	0.01	0.23	0.29	0.20	0.10	0.66	0.18	0.44	0.62	0.39	1.08	0.42	0.09	14.78	37.63	0.34	0.15	1.21
BE	0.38	45.39	0.06	0.75	0.01	0.80	0.38	1.20	0.06	4.20	1.29	0.08	2.02	0.46	0.53	1.83	1.53	0.74	12.59	1.42	0.13	0.37
CY	0.01	0.01	66.30	0.09	0.00	0.00	0.00	0.01	0.13	0.02	0.01	0.00	0.01	0.01	0.03	0.01	0.00	0.00	0.00	0.01	0.00	0.00
DE	6.52	3.09	4.07	85.24	1.05	2.88	3.83	2.96	0.89	7.30	3.53	0.62	15.00	2.59	4.28	4.48	2.74	2.37	3.02	4.66	2.74	7.99
EE	0.00	0.00	0.00	0.00	81.03	0.00	0.03	0.00	0.00	0.00	0.00	1.32	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
ES	0.63	0.75	0.05	1.03	0.05	86.73	1.03	1.39	0.16	1.61	1.93	0.10	2.28	0.05	4.95	0.85	30.92	0.03	0.25	10.76	0.27	7.23
FI	0.12	0.26	1.25	0.20	14.16	0.03	69.83	0.10	0.02	0.20	0.01	17.65	1.04	17.11	0.66	0.20	0.03	0.03	0.02	0.20	11.46	0.04
FR	1.54	28.24	2.14	3.25	0.55	3.52	1.90	90.29	1.11	6.70	13.24	0.14	42.53	0.07	4.45	3.90	4.48	10.54	2.33	4.66	1.46	7.39
GR	0.01	0.00	13.77	0.02	0.00	0.01	0.00	0.02	96.05	0.00	0.02	0.00	0.25	0.00	0.40	0.01	0.02	0.00	0.00	0.24	0.00	0.00
IE	0.25	0.42	0.16	0.30	0.04	0.30	0.19	0.40	0.24	58.90	0.08	0.09	0.54	0.01	0.18	0.75	0.23	1.41	0.46	2.02	0.31	0.10
IT	12.99	0.93	2.96	3.15	0.45	2.25	0.42	0.84	0.60	0.99	77.95	1.27	3.25	2.34	2.16	0.85	0.58	15.31	24.18	1.05	0.12	0.72
LT	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.01	0.00	72.47	0.00	0.38	0.00	0.00	0.00	0.05	0.01	0.00	0.08	0.01
LU	0.15	0.52	0.20	0.11	0.06	0.14	0.17	0.23	0.01	0.28	0.06	0.36	18.61	0.11	0.29	0.28	0.15	0.18	0.29	0.33	0.33	0.18
LV	0.02	0.01	0.17	0.00	1.10	0.00	0.01	0.00	0.01	0.02	0.00	3.35	0.02	71.82	0.02	0.01	0.01	0.00	0.02	0.01	0.04	0.01
MT	0.04	0.05	0.02	0.02	0.04	0.01	0.03	0.03	0.02	0.04	0.02	0.03	0.07	0.16	71.58	0.04	0.01	0.07	0.02	0.06	0.03	0.03
NL	1.59	19.19	3.52	3.12	0.13	1.93	2.15	1.18	0.26	2.32	1.16	0.10	6.20	0.56	2.90	84.42	0.82	0.17	1.34	1.78	0.65	5.51
PT	0.04	0.06	0.00	0.04	0.02	0.60	0.03	0.11	0.08	0.11	0.21	0.01	0.23	0.14	0.24	0.09	57.91	0.00	0.02	0.06	0.03	2.94
SI	0.06	0.04	0.01	0.01	0.01	0.01	0.04	0.01	0.00	0.04	0.01	0.21	0.04	0.28	0.00	0.03	0.01	49.09	0.14	0.01	0.01	0.03
SK	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.38	0.00	0.00	0.03	12.50	0.00	0.00	0.04
UK	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.49	0.00	11.00	0.00	0.00	0.00	0.00	0.06	0.01	0.00	0.00	0.00	70.77	0.00	0.00
SE	0.11	0.14	0.18	0.38	0.77	0.02	13.37	0.07	0.00	0.20	0.01	1.50	1.17	1.59	2.34	0.51	0.04	0.01	0.00	1.16	81.78	0.10
PL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.76
Other	0.90	0.63	2.68	1.42	0.08	0.54	6.30	0.44	0.28	5.38	0.30	0.26	6.08	0.97	3.47	1.33	0.43	5.18	5.19	0.47	0.32	0.36
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Sources: ECB and ECB calculations based on COREP reporting. Reference date is Q4 2018.
Notes: The values were calculated using supervisory data at the highest level of consolidation of about 430 banks supervised by the SSM including SIs and LSIs. This implies that credit provided to country "X" by a subsidiary of a bank resident in country "Y" is accounted for as cross-border credit. The total credit of each country is calculated as the sum of the credit from the individual countries, meaning that the total credit does not include credit from banks in non-EU countries, unless these banks have a subsidiary under SSM supervision (in this case the credit is included under the "Other" country).

The potential for cross-border spillovers may be more prevalent in banking sectors with a strong presence of foreign subsidiaries, particularly foreign branches. The empirical literature has provided some evidence that macroprudential leakages may arise due to the presence of foreign branches not being subject to measures targeting the domestic banking sector (i.e. inward spillovers).[26] As shown in Chart C.2, foreign branches are relatively important in a few EU banking sectors such as Luxembourg, Finland, Ireland, Slovakia and Estonia (as well as Malta[27]; not shown). At the same time, the presence of foreign subsidiaries is important in a number of countries, most notably the Baltics and Slovakia.

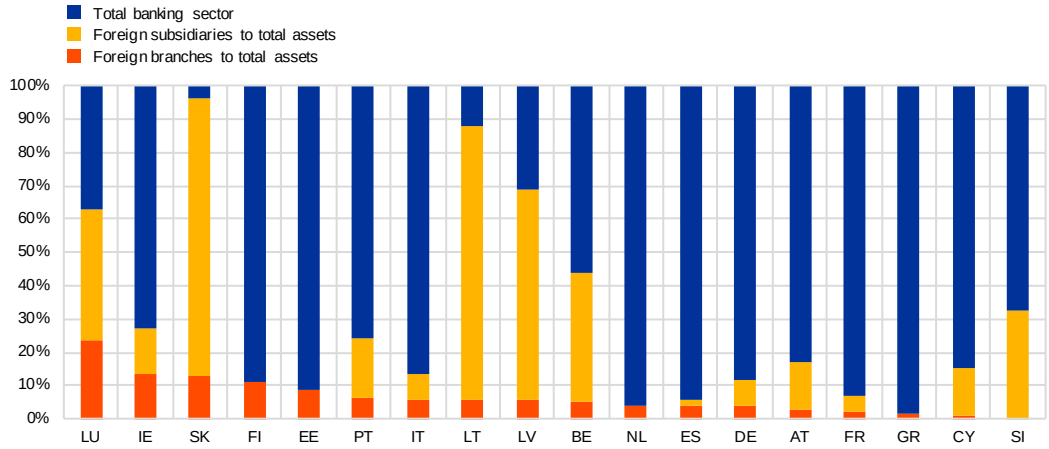
While focusing on bank lending transmission channels, the macroprudential authorities should also consider other potential activity channels and institutions. In addition to traditional bank lending channels, authorities must also keep an eye on the cross-border transmission of macroprudential measures through bank non-lending channels as well as through non-bank lending and market-financing channels. A comprehensive analysis of cross-border spillovers should thus include both an institutional perspective and a market or activity-based analysis.

[26] For a detailed review of the literature, see Kok, C. and Reinhardt, D. (eds.), "Cross-border spillover effects of macroprudential policies: A conceptual framework", *Occasional Paper Series*, ECB, forthcoming.

[27] Notwithstanding the relatively high total assets of foreign branches to domestic GDP ratio for Malta, from a risk-based perspective, these entities exhibit no links with the Maltese domestic economy and thus, the potential risk of inward spillover effects is negligible.

Chart C.2

Total assets of foreign branches and subsidiaries to total banking sector assets



Source: ECB and FSC calculations.
Note: Based on Statistics of Structural Indicators and BSI Statistics. Malta is not shown due to confidentiality reasons. Reference date is Q4 2018

C.3 An extensive list of indicators for assessing cross-border spillovers

A survey of national authority practices conducted by the FSC concluded that there is merit in extending the existing guidance for the assessment of cross-border spillovers. In 2018, the FSC surveyed the practices for assessing cross-border spillovers used by national designated and competent authorities (as well as the ECB).[28] Existing frameworks are primarily indicator-based, relying heavily on the guidance provided in the ESRB Handbook. Besides the guidance provided in this Handbook, a few authorities have used additional inputs as the basis for their assessment, such as findings obtained from empirical models and complementary indicators. Responses to the questionnaire indicated that enhancements to the current operational guidance should address a number of essential gaps: (i) the lack of guidance on suitable models; (ii) the absence of explanations for indicators (including indicative data sources for each indicator); (iii) the difficulties of gathering data to calculate some of the indicators; and (iv) the difficulties in mapping the indicators to the channels and the direction of cross-border effects.

Against this background, the FSC devised an extensive list of cross-border spillover indicators accompanied by operational guidance on how to calculate them.[29] It is recommended that the starting point for the analysis of the existence of cross-border spillover effects in the context of macroprudential policy activations is a set of indicators, which would serve the purpose of signalling the potential for spillovers across the various dimensions highlighted in Figure 1. The harmonised FSC Indicator List should be the starting point for providing macroprudential authorities within the EU with "guided discretion" for assessments of cross-border spillover effects of planned macroprudential measures, as well as for ex post monitoring of these

[28] Apart from a targeted questionnaire to the NCAs/NDAs, the information provided by Member States' relevant authorities to the ESRB follow-up questionnaire on compliance with **Recommendation ESRB/2015/2** was also taken into account.

[29] The FSC Indicator List is published as an annex to "**Framework to assess cross-border spillover effects of macroprudential policies**", Financial Stability Committee, ECB, April 2020.

measures. Authorities are encouraged to complement this with other indicators depending on the circumstances in their jurisdiction. The FSC recommended list of indicators is consistent with, but contains more than, the ESRB Handbook indicators.

The FSC also expands on the ESRB Handbook indicators by making it more operational for practical purposes, providing a detailed description of how to calculate the relevant indicators. The majority of authorities believe it is worthwhile extending the existing guidance. As regards indicators, authorities highlighted that additional practical guidance from the FSC on the build-up of a common set of indicators and possible thresholds to assess the materiality of the spillovers would be very useful. Authorities also mentioned the absence of explanations for indicators (including indicative data sources for each one), the difficulties of gathering data to calculate some of the indicators and the difficulties in mapping the indicators to the channels and the direction of cross-border effects.

The Indicator List is accompanied by guidance on how to calculate and use the indicators. In this regard, the FSC approach contains a shortlist of indicators that should be used as a starting point for an assessment, complemented with a supplementary set of indicators that may or may not be useful depending on the specific situation (as well as data availability). The list of indicators and more detailed guidance on the operational steps needed for calculating and using the indicators is provided by the ECB[30].

The set of indicators takes into account the perspective of the domestic country (d). Both indicators for measuring inward and outward spillovers have been selected from this perspective. As mentioned in the introduction, the starting point of the conceptual framework presented in this report is Chapter 11 of the ESRB Handbook, according to which, a country activating a macroprudential policy is referred to as the domestic economy (d), and other countries which are potentially affected by the policy are referred to as foreign economies (f). Inward transmission refers to the effects of domestic macroprudential policies (d) on the domestic economy (d) related to the actions of entities headquartered in foreign economies (f). Instead, outward transmission of cross-border spillover effects refers to the effects of domestic policies (d) on other foreign economies (f). The effects of foreign macroprudential policies (f) on the domestic economy (d) can be characterised both as outward spillovers from the perspective of the foreign activating countries (f) and as inward spillovers from the perspective of a passive domestic policymaker (i.e. a policymaker confronted with the activation or tightening of a macroprudential measure in another country).

For operational reasons, the list of indicators has a decision tree structure. To facilitate the assessment, the table of indicators is structured as follows: after selecting the bank- or non-bank-channel, the analysis starts with the selection of the policy instrument applied, whether an ex ante or ex post assessment is to be done, then if the assessment is done by the country activating the measure or not and, lastly, what kind of spillover to assess (inward or outward). Conditional on this, policymakers are provided with a range of indicators. Table C.2 illustrates this structure for the bank-channel. It is worth mentioning that some indicators might appear more than once as they might be applicable for ex ante and ex post assessment and/or for more than one policy instrument.

[30] See "**Framework to assess cross-border spillover effects of macroprudential policies**", Financial Stability Committee, ECB, April 2020.

Table C.2

Decision tree structure to determine the relevant indicators

Instrument category	Instruments	Assessment	Activating/ Passive country	Spillover direction	Indicator
Capital, Liquidity or Borrower-Based	A	Ex ante	Activating	Inward	BAI1
					BAI2
				Outward	BAO1
					BAO2
			Passive	Inward	BAI1
					BAI2
		Ex post	Activating	Inward	BPI1
					BPI2
				Outward	BPO1
					BPO2
			Passive	Inward	BPI1
					BPI2
	B	…	…	…	…
	C	…	…	…	…

Source: "Framework to assess cross-border spillovers of macroprudential policies", Financial Stability Committee, ECB, March 2020.

The indicators have been differentiated by category of instrument, distinguishing between capital-based, liquidity-based and borrower-based instruments. The first step in the categorisation process makes it possible to differentiate between spillover channels for each category of instrument. Similarly, further differentiation within categories helps to select the appropriate indicators. The scope of an instrument may differ, for instance. While some capital-based instruments do not (automatically) apply to branches of foreign banks (e.g. those based on Article 458 of the CRR), others do (e.g. the CCyB up to 2.5%).

Both ex ante and ex post indicators have been developed. Ex ante indicators provide insight into the potential for cross-border spillovers by measuring cross-border interlinkages. These indicators are particularly relevant before an instrument is activated. Ex ante indicators are usually measured in levels. Ex post indicators are particularly relevant for gaining insight into the development of potential cross-border spillovers after an instrument has been activated and are therefore usually expressed in terms of changes between periods t and t-1 (where t-1 is the period just prior to the policy activation).

The FSC has also reflected on how to derive relevant threshold values to determine when an indicator would signal the potential for material cross-border spillovers. Apart from pure expert judgement, two approaches to determine relevant threshold values have been considered: (i) a percentile approach based on the historical distribution of the indicator; and (ii) an early warning "signalling" approach based on the indicator's ability to predict material cross-border spillovers. While the latter approach is more conceptually appealing, at this point in time the former was deemed to be the more appropriate in light of current empirical evidence and data availability. Over the medium term, however, and once the information set improves, a signalling approach is

worth pursuing and national authorities together with the ECB and the ESRB should be encouraged to explore this option alongside the more simplistic percentile approach.

In its work on indicators, the FSC has also identified a number of data gaps that to some extent hinders an effective and comprehensive assessment of cross-border spillover effects across the EU. While the common European supervisory reporting framework provides a full, granular and comparable data set for establishing indicators to assess cross-border spillovers through banks, national supervisors do face some considerable obstacles, especially where a significant share of the domestic market relies on foreign branches and lending from foreign banks abroad. NCAs generally do not have access to data on direct cross-border lending of foreign banks to their country. In addition, reporting on foreign branches to host authorities is often very limited. While some information on foreign branches is exchanged between home and host competent authorities, it is often not sufficient to monitor all inward spillover effects.

To improve the cross-border spillover monitoring capacity within the EU, further efforts to exchange and potentially centralise relevant information should be encouraged. For NDAs/NCAs, it would be useful to have more supervisory data on significant branches to better assess prospective spillovers. In keeping with the need-to-know and proportionality principles, the exchange of necessary information about relevant branches should be facilitated. A couple of supranational initiatives have already been launched in an attempt to overcome some of these data gaps. Centralising the collection of this data would be beneficial in obtaining a complete overview of exposures. ESRB within the EU context and the ECB in its SSM capacity would be well-placed to access data for a multitude of countries and to benefit from economies of scale in the indicator calculation. The benefits of collecting and exchanging new data should obviously be weighed against the costs, and must be fully justified by the important role it would play in monitoring financial stability.

Data gaps are even bigger for non-bank transmission channels. Cross-border data for non-bank financial institutions is generally scarce and mostly available only at aggregate levels. Hence, for the time being cross-border spillover effects through non-bank channels can at best be measured and monitored only approximately.

C.4 An empirical benchmark tool

In addition to the extensive Indicator List, the FSC has created a user-friendly Excel-based tool to support ex ante assessments of likely spillover effects. Based on an extensive survey of the empirical literature[31], a range of quantitative estimates based on existing studies has been integrated into a user-friendly tool (henceforth referred to as the Empirical Benchmark Tool). The Empirical Benchmark tool, which is published as an annex[32], offers a basis for deeper spillover analysis than is possible from simple indicators (that typically do not contain information about causality). It provides authorities with a user-friendly tool, to be used at their discretion, to gauge the

[31] Kok, C. and Reinhardt, D. (eds.), "Cross-border spillover effects of macroprudential policies: A conceptual framework", *Occasional Paper Series*, ECB, forthcoming.

[32] See "**Framework to assess cross-border spillover effects of macroprudential policies**", Financial Stability Committee, ECB, April 2020.

range of potential spillover effects from considered macroprudential measures, while noting that the output needs to be interpreted with caution (as described in more detail in this report).[33]

The tool currently contains 51 entries from 21 studies. As seen in Table C.3, most studies focus on capital requirements and liquidity requirements. The high number of liquidity requirements is due to the inclusion of reserve requirements, while studies analysing the liquidity coverage ratio and the net stable funding ratio are still rare. A summary of the findings with ranges across different types of instruments is illustrated in Chart C.1.

Table C.3

Number of studies included in the tool

	Direction/Geographical Coverage					
Instrument	**Europe**	**Advanced Countries**	**World**	**Europe**	**Advanced Countries**	**World**
Capital	1	0	6	2	0	10
Borrower-based	2	1	2	2	0	7
Liquidity	1	0	7	2	0	8

Source: "Framework to assess cross-border spillovers of macroprudential policies", Financial Stability Committee, ECB, March 2020.

C.5 Some reflections on reciprocity

To minimise the risk of macroprudential policy leakages arising from inward spillover effects, various reciprocity arrangements, both mandatory and voluntary, have been put in place within the EU.[34] Reciprocity of macroprudential measures taken at domestic level is therefore aimed at ensuring that the measures are effective in achieving their stated objectives by reducing potential cross-border spillover effects. It is of great importance that an effective and efficient reciprocity framework exists for measures for which material spillovers have been observed or could reasonably be expected. The tools and indicators provided by the FSC can inform future discussions on the appropriate intensity of reciprocity by providing information on which macroprudential instrument spillovers are most material. Furthermore, indicator-based analysis reinforces and complements the ESRB guidelines on the design and required flexibility in the use of materiality thresholds.

Flexibility is warranted when setting the materiality threshold to be applied to determine which foreign institutions fall under the reciprocity scope of a macroprudential measure. The orientation value of a 1% materiality threshold has been introduced to balance the costs and benefits of reciprocation and to set a starting point to be considered when requesting reciprocity. However, this orientation value may not work in specific cases. One example could be when many banks from the same jurisdiction operate in another jurisdiction with individually small exposures

[33] The Occasional Paper cited in the previous footnote also contains an extensive review of more theoretically-based simulation models that could complement the Empirical Benchmark tool for ex ante assessments. For a recent application of such a simulation-based assessment of cross-border spillover effects, see Cantone, D., Jahn, N. and Rancoita, E., "**Thinking beyond borders: how important are reciprocity arrangements for the use of sectoral capital buffers?**", *Macroprudential Bulletin*, ECB, September 2019.

[34] Reciprocity, as defined by the ESRB, is an "*arrangement, whereby the relevant authority in one jurisdiction applies the same, or equivalent, macroprudential policy measure, as is set by the relevant activating authority in another jurisdiction, to any financial institutions under its jurisdiction, when they are exposed to the same risk in the latter jurisdiction*". See Section 2, paragraph 1(f) of **Recommendation ESRB/2015/2**.

but material exposures at aggregate level. Another example could be when a foreign institution operates in a host jurisdiction through both a foreign branch and a foreign subsidiary, which could incentivise regulatory arbitrage to avoid being affected by macroprudential measures introduced by host authorities. In those cases, the activating country should be allowed the option of diverging from the 1% rule (e.g. setting a lower threshold or applying the threshold at consolidated level) to ensure the effectiveness of the measure.

The FSC cross-border spillover framework provides a good quantitative basis indicating the need for reciprocity. The FSC framework has identified and presented a number of different indicators that can be calculated to assess the materiality of the spillover effects, which in turn give an indication of the need for reciprocity of a certain measure. Complemented with the expert judgement of the activating authority, this makes for a well-grounded decision on the materiality threshold, with the ESRB Assessment Team acting as a final check-point on the appropriateness of the threshold level.

C.6 Conclusion

This special feature presented a newly-established framework for the monitoring and assessment of cross-border spillover effects. The framework has been devised taking Chapter 11 of the ESRB Handbook as a starting point, as well as existing national practices and an extensive review of existing studies of cross-border spillover effects. The design of the framework (both the Indicator List and the Benchmark Tool) was aimed at making it as practical and operational as possible. This notwithstanding, it is still too early to tell how it works in practice and the FSC is committed to reviewing the framework once initial feedback has been gathered.