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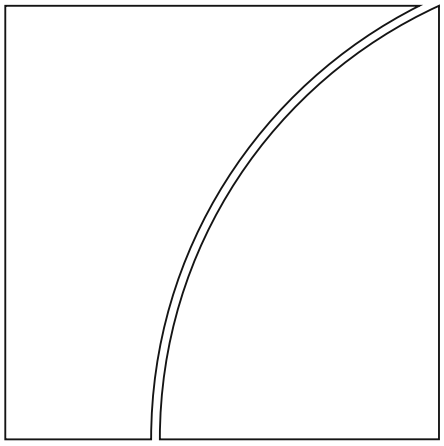

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Inter-agency coordination bodies and the speed of prudential policy responses to the Covid-19 pandemic

Michael Brei and Blaise Gadanecz

This paper investigates whether the presence of inter-agency coordination bodies for financial stability (IABs) has been associated with faster prudential policy responses to the Covid-19 pandemic. Using econometric analysis, we provide evidence that countries with IABs have enacted microprudential measures more quickly than countries without. This is not the case for macroprudential measures for which we find that IABs have been associated with slower responses. We conclude that IABs may have been useful as catalysts for the deployment of microprudential tools for macroprudential purposes.

Keywords: central bank governance, inter-agency coordination body, financial stability council, microprudential policy, macroprudential policy, Covid-19, survival analysis.

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Introduction

The paper examines whether inter-agency bodies for financial stability (IABs), tasked with improving inter-agency coordination, have contributed to faster micro- and macroprudential policy responses to the Covid-19 pandemic. Those policies served one main purpose: ease financial constraints and the uncertainty surrounding the pandemic. Prudential responses complemented central banks' policy rate reductions, emergency lending programmes, asset purchases and monetary financing operations.

Many countries have set up IABs in the aftermath of the Global Financial Crisis (GFC), see Graph 1 below. Member institutions typically include central banks, prudential regulators and finance ministries: authorities entrusted with prudential supervision and regulation, financial stability analysis, prudential monitoring and rulemaking. Such coordination bodies can contribute to improved decision-making aimed at attuning financial conditions to business cycles. In reality, however, the ability of IABs to effectively set policy is limited: the powers of many are restricted to cross-agency sharing of data and analysis; only few are entrusted with more substantial policy devices such as adjusting the counter-cyclical or capital conservation capital buffers (shown on the right panel of Graph 1).[1]

To soften the economic and financial impact of the pandemic and the associated restrictions (lockdowns, curfews, …), policymakers around the world resorted to macro- and microprudential relief measures to avoid major disruptions to bank funding and market functioning (Borio (2020)). While microprudential policies were focused on individual institutions, macroprudential policies aimed to address systemic risk.[2] These measures were in some cases coordinated through IABs, in others they were not.

Can coordination between agencies contribute to faster prudential policy responses? The literature is split on this question. Some authors (for instance, Osiński et al (2013)) argue that coordination bodies can help overcome inaction bias by fostering peer pressure between members or data disclosure. They might also help to maximise synergies and reduce tensions between the different stakeholders through information sharing and joint risk analysis (particularly in crisis situations). On the contrary, others (eg Knot (2014), Lombardi and Moschella (2017)) are of the view that such bodies may exacerbate inaction bias as they involve several authorities and mask the inaction and accountability of a single actor. Inaction bias can also result from institutional mechanisms

[1] At the soft end, the Australian Council of Financial Regulators is, for instance, tasked with identifying issues and trends, exchanging information between member bodies, harmonizing regulatory policies, and coordinating at the domestic and international levels. An example of an agency with medium powers is that of the Mexican Financial Stability Council, whose remit includes analysing and evaluating the stability of the financial system, and elaborating proposals and recommendations regarding financial stability. At the hard end, the French Haut Conseil de Stabilité Financière sets the countercyclical capital buffer; its Romanian counterpart sets macroprudential tools. The Malaysian Financial Stability Executive Committee has authority to take any measure to strengthen financial stability.

[2] The two major threats to financial stability are systemic losses stemming from borrower/issuer defaults and financial market distress. In combination with higher risks, such a shock erodes bank capital and potentially translates into a credit crunch and fire sale of securities. To relieve banks and the rest of the financial system from such pressures, not only macroprudential measures have been taken (such as the release of countercyclical capital buffers), but also microprudential ones (like temporary waivers and forbearance on prudential capital and liquidity ratios, freezes on dividends or short-selling bans). Some of the microprudential policies clearly had macroprudential objectives as they targeted system-wide uncertainty. See Aikman (2020) and Lewrick et al (2020) for an overview of prudential policies in response to Covid-19.

that hinder the effective use of prudential policies or a lack of clear hierarchy of policy objectives.

To our knowledge, this question has not been investigated in the context of *stimulative* prudential policies such as those in response to Covid-19. A related analysis of Lim et al (2013) focuses on *restraining* prudential measures in the post-GFC period. They find that strong central bank involvement, either as a single macroprudential authority or as chair of a financial stability council, reduces response time of macroprudential tools aimed at counteracting excessive credit booms and the build-up of future systemic risks.

The present paper closes this gap by examining 35 macro- and 65 microprudential measures taken between January and October 2020 in 29 advanced and 27 emerging market economies. Specifically, we relate the existence of IABs and their characteristics to the speed of prudential responses – the days elapsed since the first reported Covid-19 cases or first restrictions (eg lockdowns) in a given country – controlling for country-specific and geographic factors.

Our main finding is that the existence of IABs has been associated with faster prudential policy responses, especially on the microprudential front. Our estimations show that, after 100 days of risk exposure, the probability of taking a microprudential response is 44% for countries with IABs compared to 27% for countries without IABs. This is consistent with the hypothesis that IABs are able to resolve coordination problems and overcome inaction bias. Conversely, we do not find robust evidence that IABs have facilitated faster macroprudential measures, of which fewer were deployed.

The remainder of the paper is organised as follows. The next section reviews the related literature; the data and econometric methodology are subsequently discussed. Our main econometric findings and robustness tests follow. The final section concludes.

Related literature

One reason why IABs have been set up is that the tasks and expertise involved in preserving financial stability do not necessarily reside inside one single authority. The different types of relevant expertise (macroeconomic forecasting, macroprudential analysis, microprudential regulation and supervision) may be dispersed across an array of institutions (such as central banks, prudential regulators, finance ministries). A number of researchers (eg Bodenstein et al (2019) or Edge and Liang (2020)) have argued that for this reason, inter-agency cooperation and coordination may be beneficial and improve policy outcomes in the financial stability domain. Besides, the sheer complexity of the issues at hand may make coordination difficult, and justify delegation to a dedicated coordination body for practical reasons, since legislatures may take too much time trying to solve the problem when urgent action is needed.

Edge and Liang (2020) adduce two hypotheses explaining the raison d'être of IABs: delegation to technical experts and virtue signalling. According to the *delegation* view, politicians' incentives are distorted by political cycles and not aligned with long-term welfare. Accordingly, delegation to independent experts can overcome this problem since they cannot be easily dismissed or replaced by the government of the day.[3] The potential

[3] Seminal papers on delegation include Maskin and Tirole (2004), Alesina and Tabellini (2007) and Groll et al (2019). Delegation can provide credible commitment from the delegating authority, needed especially in polarised and unstable political environments with high replacement rates of veto-players and few checks

to misuse prudential policies for short-term political gain would thus justify the delegation to IABs. The *virtue-signalling* hypothesis, also discussed in Lombardi and Moschella (2017), posits that by setting up IABs, politicians are mostly interested in displaying virtue and showcasing token action to prevent future crises, while leaving existing decision-making processes largely intact. This logic may be behind the presence of key politicians – like finance ministers – in IABs, often as chairs.

Policy decisions in the financial stability domain are inherently prone to inaction bias. De Haan et al (2012) outline four reasons for postponed prudential policy decisions. First, the incurred costs of short-term preventive measures may seem outsized when related to long-term tail risks that are often not quantifiable or visible, let alone certain to materialise. Second, the uncertainty associated with financial stability risks may bias policymakers' preferences in favour of type I over type II errors (that is, they prefer to incorrectly assume a positive – rather than a negative – outcome). Third, lobbying by the financial sector, political preferences or capture by other stakeholders may slow down or push back policymakers' action. And lastly, trade-offs between multiple policy objectives may be difficult to achieve with a limited set of policy instruments, so authorities may prefer not to act rather than run the risk that their measures bring about unintended consequences. Examples include support to economic growth inflating asset price bubbles, or efforts to ensure the continued availability of critical services resulting in taxpayer financing for underpriced or subsidised insurance of private profits.[4]

One view in the literature (advanced, among others, by Osiński et al (2013)) is that a coordinating agency may help overcome inaction bias by providing the necessary cover to a set of member agencies, each of which may be reluctant to act on its own. Examples of cover provisions include policy recommendations, comply or explain orders, disclosure requirements of data and the decision processes, or fostering peer pressure among member agencies.

Another view presented by Knot (2014) is that inter-agency coordination can exacerbate inaction bias, because the accountability of individual institutions gets diluted inside the coordination body. As such, the economic costs of inaction by a single decision-maker are masked. This reasoning is in line with the predictions made by Lombardi and Moschella (2017).

Our paper is also related to the literature on the governance structure of monetary policy committees (MPCs) and the efficiency of their policymaking. MPC characteristics that have been studied in the literature include the identity of the decision-maker (individual versus group, designated leaders[5]), voting rules, communication style and membership type.[6] Berger and Nitsch (2011) empirically investigate the performance of MPCs of various sizes and conclude that the optimal number of members is between five

and balances (cf. Keefer and Stasavage (1998)). Delegation can also facilitate political coalitions by obviating the need to agree over policy programmes (as argued by Crowe (2006)). For a discussion of the circular relationship between de jure and de facto political power, political reform and economic outcomes, see Acemoglu et al (2008).

4 See CGFS (2012) for further discussion of financial stability policy objectives and trade-offs.

5 Blinder and Morgan (2008) conduct simulations of a monetary policy game and conclude that there is no significant difference between the performance of groups with and without a designated leader: leaders may help break deadlock if the views of members differ, but may foster groupthink (also argued by Blanchflower (2019)), depending on their leadership style (consensus-seeking versus authority-imposing).

6 The different dimensions include: insiders versus outsiders (Hansen et al (2014), Eijffinger et al (2018), Price and Wadsworth (2019)); gender (Bodea (2018)); political, professional and educational backgrounds (Bennani et al (2018), Ainsley (2019), García de Paso (2000)).

and nine: while groups are reckoned to make better policy decisions than individuals thanks to the variety of perspectives, too large a committee may be inefficient because of the time and effort involved in reconciling views.

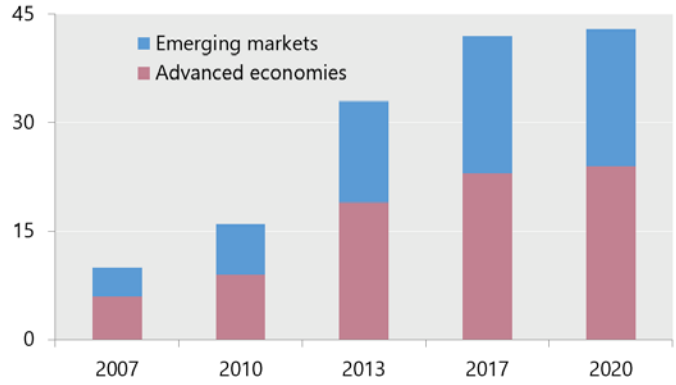
There are no studies, to our knowledge, on the effect of agency coordination on the speed of prudential responses in times of crises. We are aware of one related study using data after the GFC: Lim et al (2013). They examine the role of central banks within inter-agency bodies and conclude that a strong central bank involvement, either as a single macroprudential authority or as chair of a financial stability council, reduces response time for adjusting macroprudential tools to restrain excessive credit growth.

A look at the data: soft IAB powers and predominance of microprudential over macroprudential responses

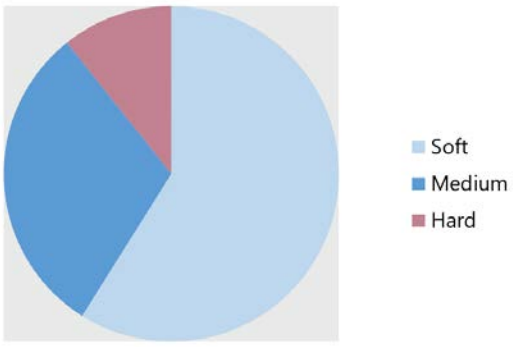
Our empirical investigation is based on 29 advanced and 27 emerging market economies over the period January to October 2020. We gathered data on the characteristics of IABs, prudential policy responses, Covid-19 and other related information.

Inter-agency bodies and their powers — Graph 1

Number of IABs since 2007



IABs' powers in 2020[1]



[1] Based on a sample of 56 countries. *Soft:* power to request data or information; general policy formulation; oversight, macroeconomic supervision, analysis; discussion, coordination. *Medium:* comply or explain; recommend macroprudential measures; issue warnings. *Hard:* appeals body; power to designate; policy decision on macroprudential matters.

Sources: Websites of central banks and other national authorities, authors' calculations.

National coordination bodies on prudential and financial stability issues started emerging in the early 2000s, but their numbers grew significantly in the aftermath of the GFC (Graph 1, left panel).[7] However, not all of the countries in our sample have an IAB (13 out of 56).

Using data collected from central bank and other national websites, we classified the powers of the coordination bodies into soft, medium and hard. Soft IAB powers include

[7] Table A1 in the Appendix provides summary information on IABs across regions. For an overview of financial stability arrangements and IABs in a large cross-section of countries, see IMF-FSB-BIS (2016). For individual country case studies, see National Treasury of South Africa (2011), IMF (2014), Liao et al (2016) and Elson (2017).

cross-agency sharing of data and analysis, medium powers consist in issuing "comply or explain" orders to members, recommendations or warnings about threats to financial stability. IABs with hard powers are entrusted with the designation of financial institutions as systemically important or operating macroprudential policy tools such as the counter-cyclical capital buffer (Ccyb). As one can observe, the majority of IABs only have soft powers, the prerogatives of one third of IABs are more substantial, and only 10% are entrusted with hard powers.[8]

We also collected information on IABs' member- and chairmanship: central banks (represented in all IABs except three), prudential regulators and supervisors, finance ministries and deposit insurers. The median IAB has four members. Thirteen IABs are chaired by central banks, while in 20 instances the ministry of finance presides. In the remaining cases, the chair rotates, several authorities co-chair or there is no chair.

We classified into micro- and macroprudential measures the Covid-19 responses from the IMF's policy tracker. The macroprudential definition includes release measures relating to systemic buffers, Ccybs and capital conservation buffers.[9] We treated as microprudential responses temporary waivers and forbearance on liquidity and capital ratios, freezes on dividends and share buy-backs by banks, trading rules like short-selling bans, and the temporary suspension of reforms aimed at reinforcing regulatory requirements.

There were far more micro- than macroprudential measures enacted during the period under review.[10] While macroprudential responses were taken mainly by European authorities[11] and were concentrated around March/April (see Graph 2, upper left panel), microprudential responses were more frequent and geographically more dispersed. They occurred across Europe, the Americas and Asia, as the pandemic and its economic consequences worked their way through the globe (Graph 2, upper right panel). It should be noted, however, that certain microprudential policies – such as freezes of dividends or forbearance on prudential ratios – clearly had macroprudential objectives since they targeted system-wide uncertainty.

[8] This is corroborated by Edge and Liang (2020) in the analysis on financial stability councils (FSCs). On p.3, they note: "[M]ost FSCs are either advisory – with the ability to issue warnings and non-binding recommendations but without the ability to take or direct actions of the member agencies – or operate purely to facilitate information sharing, communication, and policy coordination across agencies."

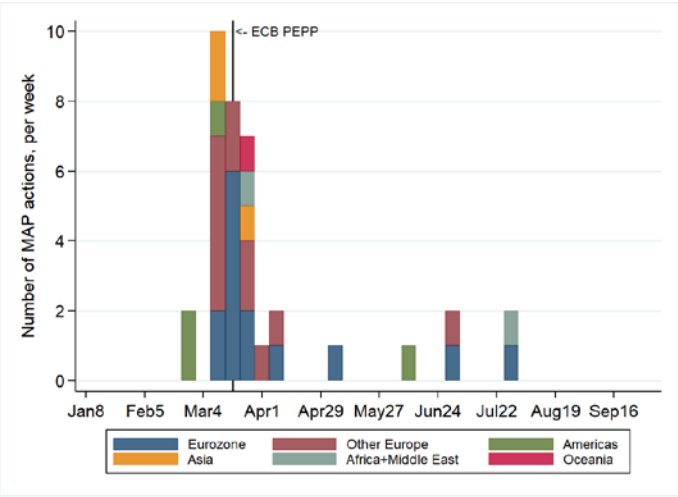
[9] Table A2 in the Appendix provides a summary of the main prudential policy responses. The policies are intended softening the constraints on bank lending stemming from capital or liquidity regulation or aim at preventing profits or capital being depleted by dividend distributions or share buy-backs. Short-selling bans were imposed as a "circuit-breaker" to preserve market confidence, liquidity and financial stability, leaving investors time to absorb information about the virus and public health policies and to translate it into securities valuations.

[10] For a detailed discussion of the prudential response to the Covid-19 crisis, see Borio (2020) and Lewrick et al (2020).

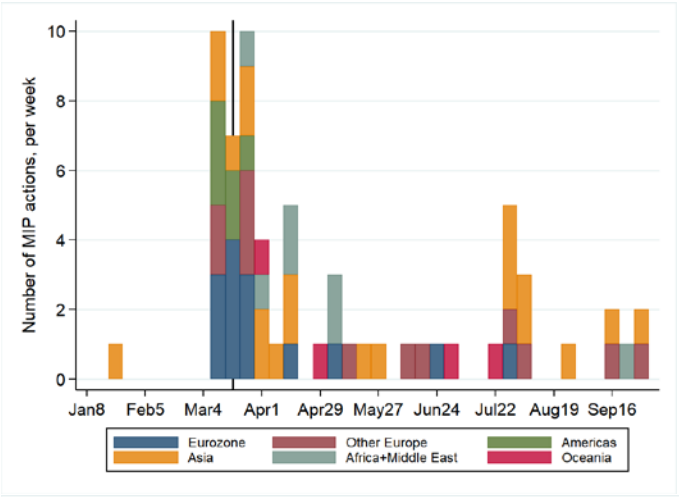
[11] For countries of the eurosystem, we only considered measures taken at the national level over and above national implementations of the ECB's prudential policy response.

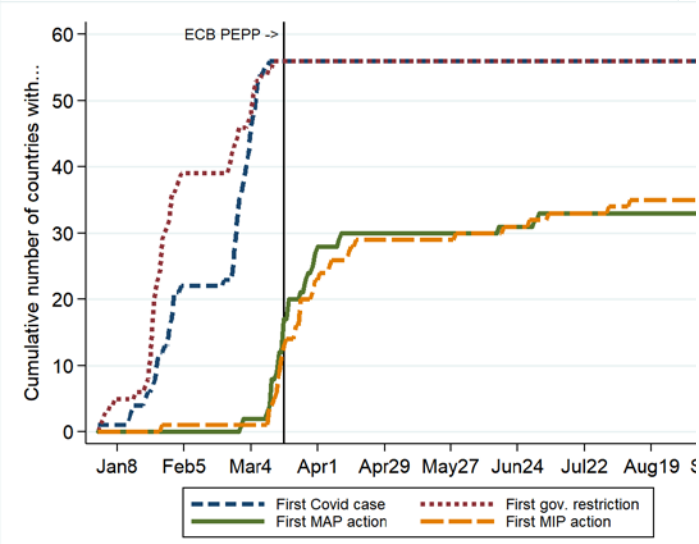
Prudential responses to the Covid crisis, January to October 2020 Graph 2

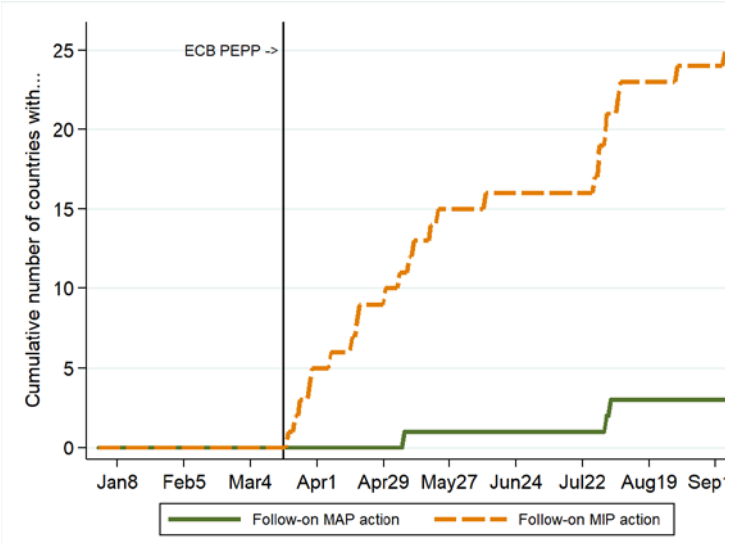
Macroprudential



Microprudential







[1] Based on a sample of 56 countries. "ECB PEPP" indicates the ECB's announcement of its €750 billion pandemic emergency purchase programme on the 18th of March 2020. Macroprudential policies (MAP) include releases of the capital conservation, countercyclical and systemic buffers. Microprudential policies (MIP) include softening of liquidity ratios and other capital requirements (ratios and components), the restriction of trading rules, freezes on dividends and share buy-backs, and modifications in asset classification and provisioning. Follow-on actions are prudential responses taken after first responses have occurred.

Sources: IMF policy tracker, available from https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19; authors' calculations.

Our measures on response speeds are calculated relative to first Covid-19 cases and first government restrictions. At the outbreak of the global pandemic, many governments started putting up restrictions even before the first Covid-19 cases were reported in their countries (Graph 2, lower left panel). Starting in March, a large number of countries enacted prudential responses.[12] Some countries responded more than once, mainly on the microprudential policy front (Graph 2, lower right panel).

[12] Measured by the number of days elapsed starting from the date when first Covid cases were reported or first restrictions were taken.

Preliminary analysis: IABs matter for the average speed of prudential responses

We calculated the speed of policy responses in 56 countries (listed in Table A10 of the Appendix) between January and October 2020. To do this we used the IMF policy tracker, the Johns Hopkins University database on Covid-19 cases, Roser et al (2020), and the government response tracker of Hale et al. (2021). For the *first* prudential measure taken in each country, we computed two proxies for policy reaction speed: the number of days elapsed between the day of the measure and (i) the day when the first Covid-19 cases were reported or (ii) the day of the first restriction measures (lockdowns, curfews, compulsory remote work, stay-at-home orders, etc).[13] For each *follow-on* measure, we calculated the number of days elapsed since the previous policy response. In the discussion that follows based on Table 1, we refer to average policy reaction speeds including both first and follow-on prudential measures.

Countries enacted *microprudential* responses with an average lag of 55 days taking the first Covid-19 case as the starting point and 62 days when considering first restrictions. For *macroprudential* measures, the average response time was 45 days when using first cases and 56 days when considering first restrictions.

Prudential policy measures: time to respond — Table 1

Governance arrangements		Speed[1] of macroprudential measures			Speed[1] of microprudential measures		
		Count	Since first restriction	Since first case	Count	Since first restriction	Since first case
All measures		35	56	45	65	62	55
IAB exists	No	9	66	51	12	88	80
	Yes	27	53	45	55	56	49
IAB strength[2]	Hard	3	47	25	7	54	50
	Medium	12	58	48	18	63	54
	Soft	12	50	47	30	52	46
IAB: number of member institutions[3]	High	21	57	51	46	54	49
	Low	6	38	25	9	65	51
IAB chair[4]	Central bank	9	51	41	26	57	51
	Ministry of finance	14	56	52	21	54	50
	Rotate/no	2	50	32	3	44	32

Unweighted means of prudential policy response speeds are shown (in days). [1] For first measures: number of days since first cases of Covid-19 were reported (respectively, since first restrictions taken) in each country. For subsequent measures: since previous measure. Count indicates the number of prudential responses. [2] Soft: power to request data or information; general policy formulation; oversight, macroeconomic supervision, analysis; discussion, coordination. Medium: comply or explain; recommend macroprudential measures; issue warnings. Hard: appeals body; power to designate; policy decision on macroprudential matters. [3] Above (below) the median value. [4] Rotate/no indicates that there is no formal chair, or the chair rotates between institutions.

Sources: IMF policy tracker, available from https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19; websites of central banks and other national authorities; Edge and Liang (2020); authors' calculations.

The existence of IABs is on average associated with speedier prudential policy reaction. This finding provides prima facie evidence of IABs' ability to resolve coordination

[13] First restriction is defined as the date at which the Hale et al. (2021) stringency index (a composite measure based on nine response indicators including school closures, workplace closures and travel bans) is larger than zero for the first time.

issues between multiple agencies and to overcome inaction bias. Specifically, microprudential policy responses occurred by up to 32 days earlier in countries with IABs than in jurisdictions without, while macroprudential measures were enacted by 6–13 days faster (see row "IAB exists").

Countries where IABs have hard powers took macroprudential measures up to 22 days quicker compared to jurisdictions where there is no IAB or where it has soft powers (row "IAB strength"). The influence of IAB powers is less clear for the speed of microprudential responses.

The lower the number of members of a coordinating agency, the faster the speed with which macroprudential measures are taken (row "IAB: number of member institutions"). We interpret this to mean that while coordinating prudential decision-making may make it more efficient, coordination becomes difficult once the size of participating agencies is above a critical mass, consistent with Berger and Nitsch (2011). In such configurations, inaction bias may re-emerge. There is a similar albeit smaller effect of IAB membership size on the speed of microprudential policy action.

The evidence so far is based on simple correlations. In what follows, we control for other factors that might affect prudential policy response speeds using regression analysis.

Regression analysis: the catalyst role of IABs for faster microprudential responses

Did the existence and characteristics of IABs make a difference for the speed of prudential reactions across countries? In this section, we investigate this question by means of a simple regression analysis. We estimate a cross-sectional model using Ordinary Least Squares:

$$speed_i = \alpha + \beta IAB_i + \gamma X_i + \varepsilon_i \qquad (1)$$

where $i = 1, \dots, n$ are countries, $speed_i$ is prudential policy reaction speed (in days), α is a constant, IAB_i and X_i are, respectively, vectors of IAB characteristics and control variables. ε_i is an error term.

Table 2 summarises the hypotheses regarding the effects of IABs' existence and their characteristics (powers, number of members, identity of the chair) on policy reaction speed. If, for instance, we find that the coefficient β is negative, then a particular IAB characteristic is associated with faster policy response.

Our parsimonious set of control variables comprises the government response index[14] at the time of the prudential response, countries' population density, hospital beds available per 1,000 inhabitants, and GDP per capita (see Table A3 in the Appendix for detailed definitions). These variables are intended to control for other factors that might influence the ability of authorities to respond efficiently to the pandemic and therewith the speed with which prudential policies have been implemented.

[14] As discussed in Hale et al (2021), the index combines three sub-indices: the *stringency* index (which records the strictness of "lockdown style" policies that primarily restrict citizens' behaviour and economic activity); the *containment and health* index (which tracks "lockdown" restrictions and closures, testing policy and contact tracing, short term investment in healthcare, as well investments in vaccines), and the *economic support* index (which records fiscal measures such as income support and debt relief).

We introduced regional indicator variables, with a separate variable for the eurozone, given that its members implement prudential measures taken by the ECB (not included as national responses in our database), in addition to taking national measures (which we do track). Table A4 in the Appendix provides summary statistics for the regression variables.

Hypothesis set-up Table 2

Governance arrangements		Speed of prudential measures, other things equal	
		Faster	Slower
IAB exists		IAB helps resolve coordination issues and overcome inaction bias…	Inaction bias persists and is exacerbated by IAB
IAB powers	Soft	…through coordination/talk	
	Hard/Medium	…also through action	
Number of IAB member institutions	Low	…to some extent, among a few member institutions	
	High	…highly efficiently, among numerous member insitutions	
Minstry of Finance is IAB chair		Single chair helps resolve coordination issues and overcome inaction bias	Single chair unable to resolve coordination issues or to overcome inaction bias
Minstry of Finance or central bank is IAB chair		Single chair helps; additional benfits from single locus for macroprudential and macroeconomic analysis	
Central bank prudential supervisor		Single locus of supervision, coordination, macroprudential and macroecnomic analyis creates additional efficiencies	Trade-offs are too difficult between microprudential and macrofinancial objectives
No chair or rotate		Single chair not needed to resolve coordination issues or to overcome inaction bias; there may be benefits from gaining a different authority's perspective in the chair at regular intervals	Single chair might help resolve coordination issues

We distinguished between micro- and macroprudential responses and estimated regressions separately (as in the preliminary analysis), and used bootstrapped standard errors clustered by region. This serves to correct for the possibility that shocks are correlated within regions, as the pandemic spreads from a country to its neighbours, or as neighbouring countries learn from each other's policy experiences or coordinate their responses.

Because the dynamics of policy coordination may differ between first and follow-on responses, we estimated the model on two samples. One set contains first policy responses only and right-censored observations for those countries that did not respond (corresponding to the days elapsed since the first restrictions and the end of the sample period – 21 October 2020). The other includes all responses (including follow-on measures) and right-censored observations for countries without responses.

The results, reported in Table 3 for first responses and in Table 4 for all responses, indicate that IABs significantly facilitated faster decision-making mainly for micro- not macroprudential crisis action. *Microprudential* measures tend to occur approximately 20 days earlier in countries where an IAB exists than in countries that do not have one (column VI of Tables 3 and 4). This effect is stronger in cases where the IAB has hard powers (column VII), and additional synergies arise from the central bank being the prudential regulator (column VIII) or chairing the IAB (column X). The results suggest that

a single locus of microprudential analysis, coordination and implementation brings about efficiency gains for coordination. IABs appear to be efficient in resolving coordination among a large number of member agencies, helping to overcome inaction bias: microprudential action is faster by up to 35 days in such configurations (column IX).

The evidence is mixed concerning the speed of *macroprudential* policy reactions. First responses occur 15 days slower in countries with an IAB, other things being equal (column I, Table 3). But responses are slightly quicker when follow-on measures are considered in the estimations (column I, Table 4). Similar mixed results are observed for IAB powers: more power is associated with slower first responses, but slightly faster responses when follow-on measures are included. We also find some evidence that macroprudential responses are slower when the central bank is (i) the prudential regulator (column III, Tables 3 and 4) or (ii) the chair of the coordination body (column V, Tables 3 and 4)

Determinants of first response speeds starting at first restrictions — Table 3

Y=days elapsed since first restriction	macroprudential response speed					microprudential response speed				
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
IAB exists, Yes	14.61**					-19.97*				
	(7.142)					(11.78)				
IAB strength, Hard/medium		14.66***					-11.64			
		(5.017)					(8.010)			
IAB strength, Soft		14.54*					-32.46*			
		(7.745)					(19.30)			
CB is PR, Yes			35.04***					-32.51***		
			(6.515)					(2.004)		
IAB, # inst., High				17.10*					-34.46**	
				(9.351)					(14.42)	
IAB, # inst., Low				3.675					43.01***	
				(14.83)					(13.19)	
IAB, chair, CB					43.93***					-13.37***
					(6.138)					(5.035)
IAB, chair, MoF					6.011					13.06
					(9.929)					(8.097)
IAB, chair, rotate/no					10.93					53.21**
					(21.35)					(25.36)
Population density	15.93***	15.92***	7.918***	16.28***	14.00***	-3.559***	-4.799**	4.813***	-5.760***	1.652
	(3.007)	(2.607)	(2.316)	(3.645)	(3.307)	(1.221)	(2.021)	(1.011)	(1.827)	(1.061)
GDP per capita	-0.873***	-0.872***	-0.439*	-0.878***	-0.641**	0.401***	0.466***	-0.019	0.458***	0.241**
	(0.293)	(0.261)	(0.265)	(0.333)	(0.306)	(0.064)	(0.068)	(0.093)	(0.105)	(0.104)
Hospital beds	-0.913**	-0.917**	-0.758***	-0.961**	-0.686	4.608***	3.749***	4.616***	5.212***	3.324***
	(0.398)	(0.457)	(0.269)	(0.411)	(0.453)	(0.711)	(1.007)	(0.490)	(0.570)	(0.520)
Government response	0.628	0.627**	0.494	0.600	0.627*	-0.221	-0.338	-0.0830	0.133	-0.148
	(0.390)	(0.316)	(0.334)	(0.414)	(0.333)	(0.228)	(0.298)	(0.184)	(0.185)	(0.260)
Americas	-26.24***	-26.32***	-18.80***	-25.83***	8.042	2.661	-13.22	0.0130	8.672	-19.21***
	(4.354)	(5.514)	(5.497)	(4.477)	(8.887)	(8.886)	(18.08)	(6.094)	(8.127)	(5.530)
Asia	35.01***	34.98***	46.76***	35.30***	67.50***	-32.06***	-40.59***	-38.99***	-24.31***	-59.18***
	(3.935)	(4.451)	(4.352)	(4.273)	(9.071)	(6.398)	(11.26)	(6.105)	(5.640)	(3.831)
eurozone	-52.70***	-52.76***	-65.75***	-48.73***	-23.33***	10.97	-2.582	28.73***	-3.216	4.365
	(3.676)	(4.715)	(2.556)	(8.154)	(2.995)	(8.657)	(16.96)	(3.663)	(9.669)	(7.192)
Other Europe	-76.80***	-76.86***	-80.25***	-74.56***	-54.80***	38.89***	25.72	46.46***	35.21***	30.29***
	(2.071)	(2.988)	(2.636)	(1.702)	(4.129)	(8.183)	(16.24)	(5.224)	(8.187)	(6.500)
Africa-Middle East	7.751	7.676	-2.081	17.11	24.86	-56.33***	-72.11***	-42.43***	-100.2***	-62.31***
	(34.73)	(36.16)	(37.04)	(58.54)	(41.49)	(8.140)	(13.98)	(5.641)	(26.20)	(10.75)
Observations	56	56	56	56	56	56	56	56	56	56
R2	0.251	0.251	0.265	0.252	0.270	0.137	0.143	0.148	0.188	0.153

Note: The estimations are based on OLS. A constant is included but not reported. Standard errors are bootstrapped with 10,000 replications, clustered by region and shown in brackets. (***, **, *) indicate significance levels on the 1%, 5%, 10% significance level. Table A3 provides detailed variable definitions.

Next, we discuss the results on the controls for country characteristics. In countries where population density is higher, first microprudential responses are enacted quicker. We interpret this as the greater hazard of fast propagation of the virus in densely populated areas imparting a sense of urgency. We observe quicker first macroprudential responses in countries with higher GDP per capita and greater hospital capacity. The intensity of governments' pandemic response (including restrictions, lockdowns and economic support) are weakly correlated with prudential response speeds. There is some weak evidence that first macroprudential policy responses occur slower in countries with stronger government responses (Table 3), while microprudential policies occur quicker (Table 4).

Determinants of all response speeds starting at first restrictions — Table 4

Y=days elapsed since first restriction and previous response	macroprudential response speed					microprudential response speed				
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
IAB exists, Yes	-3.066**					-23.22***				
	(1.309)					(5.506)				
IAB strength, Hard/medium		-3.894**					-17.49***			
		(1.703)					(2.308)			
IAB strength, Soft		-1.779					-30.05***			
		(1.174)					(9.867)			
CB is PR, Yes			12.990***					-14.55***		
			(3.524)					(2.931)		
IAB, # inst., High				-1.156					-27.92***	
				(3.383)					(6.594)	
IAB, # inst., Low				-8.508					15.39	
				(5.370)					(10.89)	
IAB, chair, CB					11.92***					-23.26***
					(3.146)					(2.156)
IAB, chair, MoF					0.194					1.163
					(3.634)					(2.995)
IAB, chair, rotate/no					-0.004					-5.868
					(7.899)					(10.17)
Population density	7.120***	7.281***	4.954***	7.424***	7.304***	3.750***	3.193***	9.290***	3.577***	6.976***
	(1.012)	(0.904)	(1.195)	(1.488)	(1.369)	(0.551)	(0.877)	(1.035)	(0.966)	(0.459)
GDP per capita	-0.146	-0.156	0.024	-0.153	-0.107	-0.001	0.027	-0.229**	-0.053	-0.149*
	(0.108)	(0.102)	(0.123)	(0.141)	(0.133)	(0.059)	(0.049)	(0.105)	(0.092)	(0.078)
Hospital beds	0.493	0.586	0.467	0.421	0.604***	2.750***	2.200***	2.932***	2.874***	2.842***
	(0.356)	(0.408)	(0.319)	(0.364)	(0.234)	(0.246)	(0.674)	(0.422)	(0.247)	(0.156)
Government response	0.521	0.527	0.493	0.506	0.530	-0.570*	-0.590*	-0.516	-0.493	-0.619*
	(0.338)	(0.332)	(0.326)	(0.348)	(0.351)	(0.335)	(0.351)	(0.352)	(0.325)	(0.365)
Americas	-16.31***	-15.10***	-12.88***	-16.26***	-4.158	-30.04***	-39.32***	-28.54***	-31.40***	-46.26***
	(2.676)	(3.489)	(3.049)	(3.018)	(6.074)	(5.401)	(11.23)	(5.235)	(5.641)	(4.993)
Asia	27.43***	27.94***	30.43***	27.44***	38.11***	-14.50***	-18.51***	-17.13***	-15.26***	-33.91***
	(2.333)	(2.658)	(2.473)	(2.770)	(5.839)	(4.264)	(6.645)	(5.141)	(4.706)	(4.167)
eurozone	-36.13***	-34.99***	-40.35***	-33.56***	-24.73***	-23.05***	-28.52***	-13.65***	-30.31***	-39.31***
	(0.434)	(1.006)	(1.632)	(2.886)	(3.361)	(4.691)	(7.971)	(3.512)	(4.598)	(5.144)
Other Europe	-36.57***	-35.55***	-37.60***	-35.13***	-28.32***	-4.731	-10.10	1.444	-8.164	-14.37*
	(3.370)	(3.779)	(3.428)	(2.863)	(5.443)	(7.993)	(11.04)	(7.604)	(7.917)	(8.084)
Africa-Middle East	1.001	2.513	-4.074	3.874	4.052	-24.10***	-33.41***	-19.86***	-57.00***	-31.74***
	(25.82)	(24.85)	(25.59)	(36.17)	(28.35)	(0.709)	(4.607)	(1.634)	(13.41)	(0.533)
Observations	91	91	91	91	91	122	122	122	122	122
R2	0.074	0.074	0.077	0.075	0.076	0.049	0.052	0.046	0.063	0.051

Note: The estimations are based on OLS. A constant is included but not reported. Standard errors are bootstrapped with 10,000 replications, clustered by region and shown in brackets. (***, **, *) indicate significance levels on the 1%, 5%, 10% significance level. Table A3 provides detailed variable definitions.

Survival analysis: the probability of prudential response as time goes by

We now validate the previous econometric estimations in a time-to-event or survival analysis. The main advantage of this approach lies in its ability to model the probability of response as a function of time elapsed, something not afforded by a classical probability estimation like Logit. Indeed, the probability of engaging in prudential policies is likely to depend on how long a country has been exposed to the pandemic and the ensuing financial stability risks.

In this setting, the *risk exposure* of a country starts when its authorities take the first Covid-related restrictions. As before, countries can enter the sample continuously throughout the length of our study. We define the *survival time* of a country as the number of days it has spent without a prudential policy response since its first risk exposure. The longer the survival time, the slower the prudential policy reaction. Our setup allows for countries with multiple prudential responses or no response at all (right-censored observations).[15] Formally, survival time is calculated as:

- for countries with at least one policy response, the number of days between the first Covid-related restriction and the date of the first prudential response;
- for countries with more than one prudential measure, we add the number of days between each subsequent and the previous prudential measure;
- for countries without a prudential response, the number of days between the first Covid-related restriction and the cut-off date (21 October).

A country's hazard (its probability of enacting a prudential response) is modelled using a parametric survival model. The explanatory variables are allowed to influence a country's hazard function $h(t_{ij})$ as follows:

$$h(t_{ij}) = h_0(t_{ij}) \exp(\alpha + \beta IAB_i + \gamma x_{ij}) \qquad (2)$$

where $i = 1, \dots, n$ are countries, $j = 1, \dots, n_i$ are events (prudential responses) by country, and t_{ij} is the survival time. The *hazard function*, $h(t_{ij})$, represents the instantaneous probability of prudential response given survival (no response) up to time t_{ij}. It depends on a baseline hazard, $h_0(t_{ij})$, and our regression variables used in the previous section.

The baseline hazard $h_0(t_{ij})$ is the value of the hazard when the constant and all other regression variables are equal to zero. It depends on survival time, and its specific form is determined using the Akaike and Bayesian information criteria. Depending on the distribution (Exponential, Weibull, Gompertz, Lognormal, Loglogistic, or Generalized Gamma), the probability of responding remains constant, increases or decreases as time elapses (Cleves et al (2008)).

[15] In this right-censored setup, each country can have 0, 1 or more events, depending on the number of prudential measures it took. As the order of events is important , we follow the conditional risk set model of Prentice et al. (1981). Their method assumes that a country is not "at risk" of a second event until the first event has occurred. Survival time is thereby not measured continuously from the time it enters the study (first risk exposure); instead, the clock is set to zero after each event. In the present setting, each country enters the sample as at least once. When a country has one observation, this means that this jurisdiction has not responded during the period under study, and as such it enters the regression as a right-censored observation

The relationship between a country's hazard, the IAB governance indicators and the control variables is estimated parametrically, using an exponential function. The probability of responding is thus multiplicatively proportional to the baseline hazard. It is estimated not in absolute, but relative terms, as a fixed proportion of the hazard of other countries (Lane et al. (1986), Whalen (1991), Strobl and Mohan (2020)).

Determinants of prudential response probabilities starting at first restrictions — Table 5

	macroprudential responses					microprudential responses				
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
IAB exists	0.936					1.428**				
	(0.126)					(0.224)				
IAB strength, Hard/medium		0.966					1.251**			
		(0.151)					(0.141)			
IAB strength, Soft		0.887					1.666			
		(0.088)					(0.653)			
CB is PR			0.816					1.427***		
			(0.106)					(0.178)		
No. of IAB institutions, High				0.933					1.519*	
				(0.243)					(0.342)	
No. of IAB institutions, Low				0.945					0.975	
				(0.247)					(0.399)	
IAB chair, CB					0.714*					1.379***
					(0.132)					(0.124)
IAB chair, MoF					0.936					1.077
					(0.289)					(0.055)
IAB chair, rotate/no					0.996					0.860
					(0.545)					(0.359)
Population density	0.809**	0.802***	0.862*	0.809**	0.836*	1.217***	1.234**	1.101***	1.206***	1.172***
	(0.069)	(0.067)	(0.067)	(0.076)	(0.087)	(0.072)	(0.104)	(0.038)	(0.076)	(0.055)
GDP per capita	1.002	1.003	1.000	1.002	1.001	0.991**	0.990**	0.995	0.993**	0.992**
	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.004)	(0.005)	(0.003)	(0.003)	(0.004)
Hospital beds	1.011	1.007	1.015	1.011	1.007	0.931***	0.945	0.934***	0.930***	0.930**
	(0.028)	(0.026)	(0.025)	(0.025)	(0.017)	(0.026)	(0.052)	(0.018)	(0.025)	(0.029)
Government response	0.991	0.991	0.992	0.991	0.991	1.021	1.022	1.019	1.021	1.021
	(0.026)	(0.026)	(0.027)	(0.027)	(0.024)	(0.017)	(0.019)	(0.017)	(0.017)	(0.020)
Americas	1.134***	1.083	1.076	1.133**	0.857	0.442***	0.531*	0.452***	0.461***	0.526***
	(0.053)	(0.065)	(0.069)	(0.060)	(0.207)	(0.056)	(0.176)	(0.048)	(0.058)	(0.046)
Asia	0.532***	0.522***	0.491***	0.532***	0.403**	0.861*	0.939	0.919	0.906	1.079
	(0.064)	(0.068)	(0.085)	(0.060)	(0.150)	(0.078)	(0.146)	(0.084)	(0.082)	(0.142)
eurozone	1.474***	1.408***	1.590***	1.468**	1.152	0.736*	0.850	0.598***	0.815	0.856
	(0.043)	(0.0445)	(0.169)	(0.255)	(0.188)	(0.127)	(0.329)	(0.087)	(0.189)	(0.204)
Other Europe	1.451*	1.392	1.482	1.448***	1.201	0.816	0.942	0.721	0.870	0.914
	(0.286)	(0.301)	(0.398)	(0.181)	(0.374)	(0.203)	(0.421)	(0.144)	(0.235)	(0.279)
Africa-Middle East	1.515	1.441	1.609	1.506	1.338	1.210	1.506	1.094	1.624	1.307
	(1.260)	(1.169)	(1.310)	(1.418)	(1.187)	(0.216)	(0.472)	(0.149)	(0.710)	(0.279)
Observations	91	91	91	91	91	122	122	122	122	122
Countries	56	56	56	56	56	56	56	56	56	56

Note: Hazard ratios (exponentiated coefficients) are reported. The estimations are based on hazard regressions using the Gompertz distribution. A constant is included but not reported. Standard errors are clustered by region and shown in brackets. (***, **, *) indicate significance levels on the 1%, 5%, 10% significance level.

The key parameter of interest is β which in its exponential form $\exp(\beta)$ is known as the *hazard ratio*. It is defined as the ratio between the hazard functions of two countries, other things being equal. For instance, if we consider two countries, one with an IAB ($IAB_i = 1$) and another without an IAB ($IAB_k = 0$), then a hazard ratio larger (smaller) than one means that a country with an IAB has a higher (lower) probability of responding at any point in time.

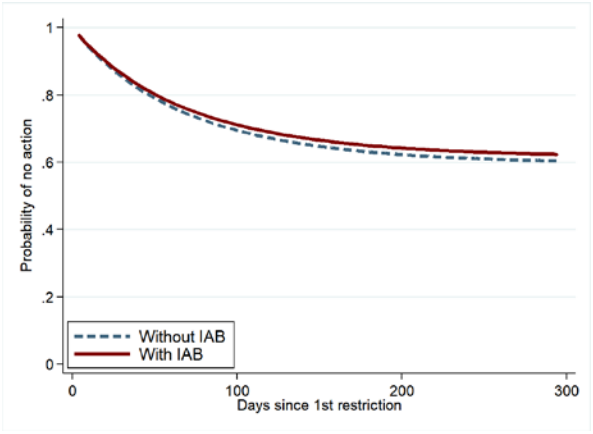
The results, reported in Table 5, largely confirm our previous findings. IABs appear to facilitate faster decision-making for microprudential crisis measures.[16] Microprudential measures have a 43% likelihood of occurring faster in countries where an IAB exists (significant hazard ratio of 1.43, see column VI) compared to countries that do not have IABs. Likewise, where the IAB has hard powers to set prudential tools, microprudential action is quicker (by 25%, column VII).

In the microprudential domain, IABs appear to be efficient in resolving coordination among a large number of member agencies, helping to overcome inaction bias: faster microprudential action is 51% likelier in such configurations (column IX). Faster microprudential reaction is also more likely (by 38%) when the central bank chairs the IAB, and when it is the prudential regulator (column VIII). A single locus of microprudential analysis, coordination and implementation appears to bring efficiency gains for coordination.

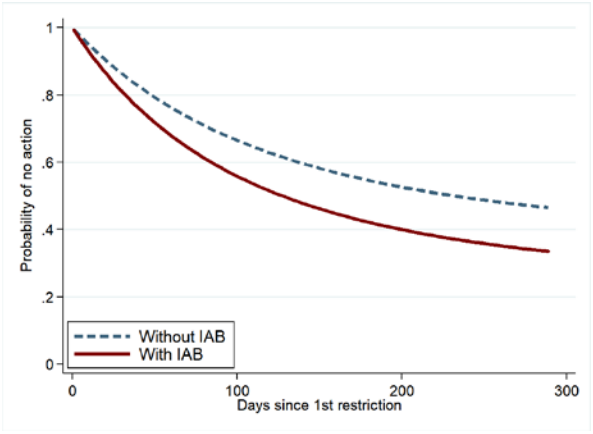
By contrast, the existence of IABs is not associated with significantly faster or slower macroprudential responses (column I). The number of member institutions is not a significant determinant of macroprudential response speed (column IV), either. There is weak evidence that central bank chairs augment the probability of slower responses (column V).

Survival functions — Graph 3

Macroprudential responses



Microprudential responses



[1] Based on a sample of 56 countries. The survival functions, evaluated at the means of the regression variables, are calculated using specifications (I) and (VI) shown in Table 5. The lower the curve, the higher is the probability of a macro- or microprudential response.

The survival functions resulting from our estimations are shown in Graph 3. The existence of IABs is associated with slightly higher probabilities of taking no macroprudential action as time elapses (left panel). On the microprudential front, countries with IABs have consistently lower probabilities of no action (right panel). For instance, after 100 days of risk exposure, the probability of no microprudential response is 56% for countries with IABs compared with 73% for the other countries. Moreover, we

[16] We estimated the models using the Exponential, Weibull, Gompertz, Lognormal, Loglogistic and Generalized Gamma distributions and report the model selection criteria in Table A5 of the Appendix. The results favour the Gompertz distribution to the extent that the estimations obtained the highest Log-likelihood and the lowest Akaike and Bayesian information criteria values.

observe that countries without IABs become even more likely – relative to those with IABs – to take no microprudential response as time goes by.

Robustness checks

A corollary to the impact of IAB presence and characteristics on the *speed* of prudential policy reactions is their influence on the *probability* of measures being taken. Does the existence or specific characteristics of IABs make prudential responses likelier? To answer this question, we re-estimated model (1) as a Logit regression, replacing policy reaction speed as the dependent variable with an indicator variable of responding or not. The variable is equal to one when a country enacted a prudential response during our sample period and zero if it did not. The results, shown in Table A6 of the Appendix, indicate that the existence of IABs is not a significant determinant of policy reaction happening in the first place. Similar to our earlier findings, the central bank as a chair is associated with significantly higher probabilities of microprudential response, but lower probabilities of macroprudential response. There is also some evidence that IABs with few members have lower microprudential response probabilities compared to other configurations.

In addition, we subjected the results of the survival analysis to two more sets of robustness tests.

First, we estimated the determinants of prudential response speeds using the same model specification, methodology and regressors as in the survival analysis described above, but taking its *first reported Covid case* as the starting date for risk exposure, rather than the first restriction. Response speed is thus calculated relative to the date of the first Covid case. The estimates, reported in Table A7 of the Appendix, are similar to our main results, though the influence of the strength of IABs on policy reaction speed is now less clear.

Second, as a cross-check on our IAB dataset, we also re-ran the estimations using the financial stability council (FSC) governance indicators of Edge and Liang (2020)[17] as determinants of prudential policy speeds. We used the authors' information on the existence of FSCs, their powers (purely advisory or harder), and their numbers of voting members. The comparison in average response time and regression analysis with these data, reported in Tables A8 and A9, indicate that FSCs are associated with significantly speedier microprudential responses compared to countries with de facto FSCs, and to those that do not have one. This is shown in columns IV and X of Table A9 for response time relative to first restrictions and first Covid-19 cases, respectively. We do not observe such an accelerating effect for macroprudential responses. Another finding is that microprudential responses have been quicker in countries where the FSC only has advisory powers (columns V and XI). Finally, we observe that FSCs are able to resolve coordination problems between a large number of parties, when microprudential measures are considered starting at the first Covid-19 case (column XII).

[17] One difference between Edge and Liang (2020)'s governance indicators and ours is that they combine a large number of FSC characteristics (formal versus informal FSC, members' voting powers, number of chairs, existence of tools) to determine FSCs' powers. By contrast, we use a soft/medium/hard power classification scheme described in the data section. For comparability with Edge and Liang, we only use their "FSC is advisory only" dummy variable – instead of their power score – to re-estimate our model using their dataset. Another difference between the approach of Edge and Liang and ours is that, while they consider one council per country, we aggregate information from several inter-agency bodies in jurisdictions where there are several such bodies (eg Iceland: Financial Stability Council + Systemic Risk Committee; Japan: Council for Cooperation on Financial Stability + Financial Crisis Response Council).

Conclusions

This is the first empirical study, to our knowledge, investigating the effects of institutional arrangements for financial stability – specifically, of the existence and characteristics of inter-agency coordination bodies – on the speed of prudential policy responses to the Covid-19 pandemic. We provide evidence that the existence of IABs has been associated with *microprudential* measures being taken faster, pointing to IABs' contribution to resolving coordination problems and overcoming inaction bias, even in the presence of a large number of member agencies. The central bank serving as the IAB chair and being the prudential regulator has brought additional synergies in this context.

Conversely, for *macroprudential* measures, of which relatively fewer were deployed, our estimates provide evidence that the existence of IABs is associated with *slower* first responses. This finding is consistent with the virtue-signalling hypothesis developed by Lombardi and Moschella (2017) and Edge and Liang (2020). The soft powers of IABs may have been insufficient to convince stakeholders. In some cases, this may have slowed down decision-making by adding a layer of compulsory discussion, information and data exchange.

One has to bear in mind, however, that microprudential responses often served macroprudential purposes in 2020 since they targeted system-wide uncertainty. In this sense, another interpretation of our findings is that IABs may act as useful catalysts when policymakers deploy microprudential tools for macroprudential purposes. Concretely, they may serve as useful fora for such policy discussions or decision-making when the individual perspectives of authorities (or mandates) are purely microprudential, relating to individual institutions or only to specific parts of the financial system.

Finally, the main focus of this paper has been to analyse the effects of institutional arrangements in the financial stability area on the speed with which prudential relief measures were taken in response to the Covid-19 crisis. We did not examine the effects of response speed on macroeconomic outcomes, indicators of bank health or stock markets. We leave this question for future research.

References

Acemoglu D, S Johnson and J Robinson (2008): "When Does Policy Reform Work? The Case of Central Bank Independence", *Brookings Papers on Economic Activity*, Spring

Aikman, D. (2020): "Role of macroprudential policy in the Covid crisis", King's College London. https://www.kcl.ac.uk/news/qcgbf-role-macroprudential-policy-covid-crisis

Ainsley, C (2019): A Defense of Decentralized Central Banking Systems: Public Opinion, Political Ideology and the Democratic Legitimacy of Central Banks, Department of Political Science, University of Washington, *mimeo*

Alesina, A and G Tabellini (2007): "Bureaucrats or Politicians? Part I: A Single Policy Task.", *American Economic Review*, 97, pp. 169-179.

Bank for International Settlements (2018): "Moving forward with macroprudential frameworks", *Annual Economic Report*, Chapter IV

Bennani, H, E Farvaque, P Stanek (2018): "Influence of regional cycles and personal background of FOMC members' preference and disagreement", *Economic* Modelling 68, 416-424

Bodea, C (2018): "Engendering the Governance of the Economy: When are Women Elevated to Central Bank Boards?", *mimeo,* Michigan State University

Borio, C (2020): "The prudential response to the Covid-19 crisis", Speech at the BIS Annual General Meeting, 30 June.

Berger, H and V Nitsch (201 1) "Too Many Cooks? Committees in Monetary Policy." Southern Economic Journal , 78,

Blanchflower, D (2019): "The Bank of England is captive of groupthink", *FT Opinion*, 13 October

Blinder, A, and J Morgan (2008): "Do Monetary Policy Committees Need Leaders? A Report on an Experiment." *American Economic Review: Papers and Proceedings*, 98, 224-9.

Bodenstein M, L Guerrieri, J La Briola (2019): "Macroeconomic Policy Games", *Journal of Monetary Economics,* Volume 101, January, Pages 64-81

Borio, C (2020): "The prudential response to the Covid-19 crisis", speech delivered on the occasion of the Annual General Meeting of the BIS on 30 June 2020, https://www.bis.org/speeches/sp200630a.pdf

Cleves, M, W Gould, WW Gould, R Gutierrez and Y Marchenko (2008): "An Introduction to Survival Analysis Using Stata", Stata Press, 2nd Edition

Committee on the Global Financial System (2012): "Operationalising the selection and application of macroprudential instruments", *CGFS Papers* No 48, December

Crowe C (2006): "Goal-Independent Central Banks : Why Politicians Decide to Delegate", IMF Working Papers No WP/06/256, November

De Haan, J, A Houben and R van der Molen (2012): "Governance of macroprudential policy", *Zeitschrift für öffentliches Recht* 67:283–302

Edge, R M and J N Liang (2020): "Financial Stability Committees and Basel III Macroprudential Capital Buffers", *Finance and Economics Discussion Series* No. 2020-016, Washington: Board of Governors of the Federal Reserve System, https://doi.org/10.17016/FEDS.2020.016

Elson A. (2017): "The Challenge for Macroeconomic Policy in the Wake of the Crisis" In: "The Global Financial Crisis in Retrospect" Palgrave Macmillan, New York. https://doi.org/10.1057/978-1-137-59750-2_4

Eijffinger, S, R Mahieu and L Raes (2018): "Inferring hawks and doves from voting records", European Journal of Political Economy 51, 107-120

Evrensel, A Y (2007): "Banking crisis and financial structure: A survival-time analysis", *International Review of Economics and Finance* 17, 589–602

García de Paso, J I, (2000): "Partisan Appointments to the Central Bank: Policy Uncertainty and the Democratic Deficit", *Journal of Macroeconomics*, Summer 2000, Vol. 22, No. 3, pp. 471-489

Groll T, S O'Halloran and G McAllister (2019): "Delegation and the Regulation of U.S. Financial Markets" Columbia University, mimeo, available from http://www.columbia.edu/~tg2451/research/Delegation_and_Regulation_US_Finance_online.pdf

Hale, T, N Angrist, R Goldszmidt, B Kira, A Petherick, T Phillips, S Webster, E Cameron-Blake, L Hallas, S Majumdar, and H Tatlow (2021): "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)", Nature Human Behaviour.

Hansen, S, M McMahon and C Velasco Rivera (2014): Preferences or private assessments on a monetary policy committee?, *Journal of Monetary Economics* 67, 16–32

IMF-FSB-BIS (2016): "Elements of Effective Macroprudential Policies Lessons from International Experience (August), available from https://www.fsb.org/wp-content/uploads/Elements-of-Effective-Macroprudential-Policies1.pdf.

International Monetary Fund (2014): Country Report No. 14/126 – FSAP on Korea (May)

Keefer P and D Stasavage (1998): "When does delegation improve credibility? Central Bank independence and the separation of powers," *CSAE Working Paper Series* 18, Centre for the Study of African Economies, University of Oxford.

Knot K (2014): "Governance of macroprudential policy", *Banque de France Financial Stability Review* No, 18, April

Lane, WR, SW Looney, JW Wansley (1986): "An application of the cox proportional hazards model to bank failure", *Journal of Banking and Finance*, Vol 10, Issue 4

Lewrick U, C Schmieder, J Sobrun and E Takáts (2020): "Releasing bank buffers to cushion the crisis – a quantitative assessment", *BIS Bulletin* No. 11, May

Liao M, T Sun, and J Zhang (2016): "China's Financial Interlinkages and Implications for Inter-Agency Coordination", *IMF Working Paper* No. WP/16/181

Lim, C, I Krznar, F Lipinsky, A Otani, and X Wu (2013): "The Macroprudential Framework: Policy Responsiveness and Institutional Arrangements, IMF Working Paper 13/166.

Lombardi D and M Moschella (2017): "The symbolic politics of delegation: macroprudential policy and independent regulatory authorities", *New Political Economy*, 22:1, 92-108

Maskin E and J Tirole (2004): "The Politician and the Judge: Accountability in Government", *The American Economic Review*, Vol. 94, No. 4 (September)

National Treasury of South Africa (2011): "A safer financial sector to serve South Africa better", available under http://www.treasury.gov.za/twinpeaks/.

Osiński J, K Seal and L Hoogduin (2013): "Macroprudential and Microprudential Policies: Toward Cohabitation", *International Monetary Fund Staff Discussion Note* No. SDN 13/05, June

Prentice, B, BJ Williams and AV Peterson (1981): "On the regression analysis of multivariate failure time data", *Biometrika*, Vol 68, Issue 2

Price, G and A Wadsworth (2019): "Effective monetary policy deliberation in New Zealand", *Reserve Bank of New Zealand Bulletin* Vol 82 No 1, April

Roser, M, H Ritchie, E Ortiz-Ospina and J Hasell (2020): "Coronavirus Pandemic (COVID-19)". Published online at OurWorldInData.org: https://ourworldindata.org/coronavirus

Strobl, E and Mohan, P (2020): "Climate and the Global Spread and Impact of Bananas' Black Leaf Sigatoka Disease", *Atmosphere*, Vol 11

Whalen, G (1991): "A Proportional Hazards Model of Bank Failure: An Examination of Its Usefulness as an Early Warning Tool," Federal Reserve Bank of Cleveland, Economic Review, vol. 27, no. 1.

Appendix

Inter-agency coordination bodies by region — Table A1

	Number of countries	IAB exists		IAB strength		CB is prudential regulator		Affiliation of IAB chair			Number of IAB member institutions
		Yes	No	Hard /medium	Soft	Yes	No	CB	MoF	Rotate/no	
Africa and Middle East	3	3	0	2	1	3	0	2	0	0	6
Americas	8	6	2	4	2	3	5	1	4	1	8
Asia	10	8	2	3	5	5	5	2	4	2	6
Oceania	2	2	0	0	2	1	1	2	0	0	5
eurozone	18	12	6	7	5	14	4	3	7	0	4
Other Europe	15	12	3	7	5	9	6	6	5	1	4
Sum/average*	56	43	13	23	20	35	21	16	20	4	5*

Note: "Soft" IAB strength includes power to request data or information, general policy formulation, oversight, macroeconomic supervision, analysis, discussion and coordination. "Hard/medium" IAB strength means comply or explain, recommend macroprudential measures, issue warnings, appeals body, power to designate, and policy decision on macroprudential matters. "CB" stands for central bank and "MoF" for ministry for finance. "Rotate/no" indicates that there is no formal chair, or the chair rotates between institutions.

Source: Compiled by the authors based on national laws, central bank and national authority websites, and Edge and Liang (2020).

Prudential policies by type — Table A2

35 macroprudential relief measures	65 microprudential relief measures
Countercyclical capital buffer release	Liquidity ratios (ratio and components)
Capital conservation buffer	Other capital requirements (ratios and components)
Systemic buffers	Trading rules (short selling bans)
	Freezes on dividends and share buy-backs
	Asset classification and provisioning

Note: The table summarizes the prudential policy responses taken during the period January to October 2020. A prudential response of a given country may encompass more than one of these categories.

Variable definitions Table A3

Variable	Definition	Categories/units	Sources
MAP speed, first restriction	Time between macroprudential (MAP) response and first restriction	Days	Roser et al (2020), Hale et al (2021)
MAP speed, first case	Time between MAP response and first case	Days	Roser et al (2020)
MIP speed, first restriction	Time between microprudential (MIP) response and first restriction	Days	Roser et al (2020), Hale et al (2021)
MIP speed, first case	Time between MIP response and first case	Days	Roser et al (2020)
IAB exists	Does an inter-agency body (IAB) exist	Yes, no	Authors' own analysis and Edge and Liang (2020)
IAB strength	Powers of IAB	Hard/medium, soft, n.a.	
CB is PR	Is the central bank (CB) the prudential regulator (PR)	Yes, no	Authors' own analysis and Edge and Liang (2020)
No. of IAB institutions	Is the number of institutions in the IAB above the median	High, low, n.a.	Authors' own analysis and Edge and Liang (2020)
IAB chair	Affiliation of committee chair	Central bank (CB), ministry of finance (MoF), rotate/no, n.a.	Authors' own analysis and Edge and Liang (2020)
Population density	Inhabitants per km^2	ln 1,000 per 1 km^2	Roser et al (2020)
GDP per capita	GDP per inhabitant	ln 1,000 USD	Roser et al (2020)
Hospital beds	Number of hospital beds	Per 1,000 inhabitants	Roser et al (2020)
Government response	Strength of government response (aggregate over 19 measures, including lockdowns, restrictions and economic support)	Scale from 0 to 100	Hale et al (2021)

Summary statistics for the regression variables Table A4

Variable	Obs.	Mean	Std. dev.	Min	Max
MAP speed, first restriction	56	132.36	108.86	4	296
MAP speed, first case	56	142.32	108.98	4	294
MIP speed, first restriction	56	134.25	101.76	2	289
MIP speed, first case	56	121.80	100.36	5	281
Control variables					
IAB exists	56	0.77	0.43	0	1
IAB strength	56	0.95	0.88	0	2
CB is PR	56	0.63	0.49	0	1
No. of IAB institutions	56	0.61	0.85	0	2
IAB chair	56	1.36	1.18	0	3
Population density	56	0.27	1.05	0.00	7.92
GDP per capita	56	33.28	18.12	6.43	94.28
Hospital beds	56	4.31	2.60	0.53	13.05
Government response	56	58.03	15.46	25.64	96.15

Note: The summary statistics are based on the estimation sample of Table 3. Prudential response speeds only take into account first responses and for those countries that did not respond the days elapsed since the first case/restriction and the end of our sample period (right-censored observations).

Model selection criteria for the survival analysis — Table A5

Distribution	Obs	Log-Likelihood	AIC	BIC	Obs	Log-Likelihood	AIC	BIC
	macroprudential responses				microprudential responses			
Exponential	91	-109.99	231.99	247.05	122	-169.74	351.49	368.31
Weibull	91	-108.08	230.15	247.73	122	-167.92	349.84	369.47
Gompertz	91	-100.77	215.55	233.12	122	-165.13	344.27	363.90
Lognormal	91	-104.40	222.79	240.37	122	-167.61	349.23	368.85
Loglogistic	91	-106.32	226.64	244.21	122	-167.61	349.23	368.86
Generalised gamma	91	n.a.	n.a.	n.a.	122	-167.35	350.69	373.12

Note: The table shows the values of the log-likelihood (Log-L), Akaike (AIC) and Bayesian (BIC) information criteria for the baseline models (I) and (VI) shown in Table 5 for different distributions of the hazard function. 'n.a.' indicates that the estimation did not converge.

Determinants of first response probability — Table A6

Y=1, if there is a first response	macroprudential responses					microprudential responses				
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
IAB exists, Yes	0.681					1.050				
	(0.581)					(0.759)				
IAB strength, Hard/medium		0.656					0.971			
		(0.560)					(0.331)			
IAB strength, Soft		0.727					1.202			
		(0.652)					(1.718)			
CB is PR, Yes			0.362**					1.874***		
			(0.175)					(0.387)		
IAB, # inst., High				0.667					1.681	
				(0.748)					(1.667)	
IAB, # inst., Low				0.748					0.145***	
				(0.504)					(0.091)	
IAB, chair, CB					0.290					0.770
					(0.250)					(0.173)
IAB, chair, MoF					1.002					0.806
					(1.447)					(0.517)
IAB, chair, rotate/no					0.823					0.201
					(2.243)					(0.465)
Population density	0.614	0.617	0.759	0.611	0.688	1.305	1.321	1.127	1.506*	1.220
	(0.198)	(0.200)	(0.171)	(0.235)	(0.267)	(0.248)	(0.274)	(0.204)	(0.317)	(0.241)
GDP per capita	1.031	1.031	1.022	1.031	1.022	0.985	0.984	0.991	0.977*	0.984
	(0.037)	(0.037)	(0.034)	(0.039)	(0.039)	(0.011)	(0.013)	(0.008)	(0.012)	(0.013)
Hospital beds	1.054**	1.057***	1.051***	1.054**	1.042	0.902	0.910	0.888	0.877	0.928
	(0.025)	(0.020)	(0.016)	(0.024)	(0.041)	(0.157)	(0.169)	(0.147)	(0.142)	(0.136)
Government response	0.989	0.989	0.992	0.989	0.989	1.018	1.019	1.015	1.009	1.016
	(0.028)	(0.027)	(0.032)	(0.030)	(0.025)	(0.018)	(0.025)	(0.015)	(0.016)	(0.017)
Americas	1.506	1.611	1.276	1.502	0.486	1.146	1.183	1.340	0.870	1.346
	(0.678)	(0.819)	(0.762)	(0.642)	(0.533)	(0.685)	(0.718)	(0.695)	(0.479)	(0.785)
Asia	0.500	0.517	0.346*	0.499	0.166	7.557***	7.242***	10.62***	5.658***	12.31**
	(0.257)	(0.288)	(0.188)	(0.251)	(0.222)	(1.363)	(2.433)	(3.266)	(1.536)	(12.69)
eurozone	1.953***	2.063**	2.893***	1.884	0.791	1.356***	1.366**	1.164	2.160***	1.202*
	(0.485)	(0.743)	(0.626)	(1.272)	(0.155)	(0.151)	(0.186)	(0.124)	(0.507)	(0.127)
Other Europe	4.433***	4.673***	5.512***	4.362***	2.432*					
	(1.396)	(1.807)	(2.603)	(0.504)	(1.204)					
Africa-Middle East	0.864	0.915	1.238	0.791	0.478					
	(1.798)	(1.924)	(2.630)	(2.112)	(1.256)					
Observations	56	56	56	56	56	51	51	51	51	51

Note: The estimations are based on the Logit estimator. Odds ratios are shown. A constant is included but not reported. Standard errors are clustered by region and shown in brackets. (***, **, *) indicate significance levels on the 1%, 5%, 10% significance level.

Determinants of prudential response probabilities starting at first cases Table A7

	macroprudential responses					microprudential responses				
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
IAB exists	0.902					1.443**				
	(0.129)					(0.215)				
IAB strength, Hard/medium		1.261					1.272			
		(0.221)					(0.190)			
IAB strength, Soft		1.286***					1.655			
		(0.096)					(0.551)			
CB is PR			0.869					1.401***		
			(0.152)					(0.075)		
No. of IAB institutions, High				0.878					1.527**	
				(0.242)					(0.306)	
No. of IAB institutions, Low				0.985					0.975	
				(0.268)					(0.389)	
IAB chair, CB					0.726					1.334***
					(0.142)					(0.148)
IAB chair, MoF					0.855					1.082
					(0.239)					(0.065)
IAB chair, rotate/no					1.214					0.884
					(0.868)					(0.359)
Population density	0.767***	0.747***	0.810***	0.761**	0.787**	1.225***	1.240***	1.113***	1.213***	1.180***
	(0.074)	(0.059)	(0.040)	(0.095)	(0.082)	(0.064)	(0.091)	(0.031)	(0.067)	(0.047)
GDP per capita	1.003	1.005	1.001	1.004	1.003	0.990***	0.990**	0.994**	0.992***	0.991***
	(0.005)	(0.004)	(0.005)	(0.007)	(0.007)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)
Hospital beds	1.017	1.007	1.019	1.018	1.010	0.933***	0.945	0.937***	0.932***	0.932**
	(0.028)	(0.024)	(0.026)	(0.023)	(0.016)	(0.024)	(0.048)	(0.016)	(0.025)	(0.026)
Government response	0.997	0.996	0.998	0.998	0.997	1.020	1.021	1.019	1.021	1.021
	(0.026)	(0.027)	(0.028)	(0.028)	(0.024)	(0.017)	(0.018)	(0.017)	(0.016)	(0.019)
Americas	0.920	0.809*	0.898	0.915	0.740**	0.344***	0.335***	0.390***	0.264***	0.366***
	(0.176)	(0.100)	(0.177)	(0.194)	(0.102)	(0.086)	(0.066)	(0.080)	(0.122)	(0.098)
Asia	0.563***	0.531***	0.537***	0.563***	0.435*	0.646**	0.570***	0.745	0.501	0.727
	(0.089)	(0.103)	(0.088)	(0.094)	(0.191)	(0.141)	(0.117)	(0.144)	(0.240)	(0.197)
eurozone	1.497***	1.318**	1.623***	1.446**	1.254	0.832	0.681	0.928	0.612	0.776
	(0.066)	(0.159)	(0.246)	(0.239)	(0.176)	(0.141)	(0.164)	(0.128)	(0.250)	(0.156)
Other Europe	1.571*	1.399	1.635	1.541**	1.375	0.584*	0.542***	0.527**	0.473*	0.614
	(0.389)	(0.459)	(0.527)	(0.287)	(0.423)	(0.172)	(0.088)	(0.134)	(0.188)	(0.222)
Africa-Middle East	1.530	1.333	1.596	1.436	1.362	0.654	0.605**	0.639	0.513	0.666
	(1.283)	(1.031)	(1.305)	(1.429)	(1.251)	(0.232)	(0.136)	(0.194)	(0.238)	(0.277)
Observations	91	91	91	91	91	122	122	122	122	122
Countries	56	56	56	56	56	56	56	56	56	56

Note: Hazard ratios (exponentiated coefficients) are reported. The estimations are based on hazard regressions using the Gompertz distribution. A constant is included but not reported. Standard errors are clustered by region and shown in brackets. (***, **, *) indicate significance levels on the 1%, 5%, 10% significance level.

Prudential policy measures: average speeds using Edge and Liang's FSC governance indicators

Table A8

Governance arrangements		Speed[1] of macroprudential measures			Speed of microprudential measures		
		Count	Since first restriction	Since first case	Count	Since first restriction	Since first case
All measures		37	56	45	67	62	55
FSC exists	De facto	7	57	47	10	38	33
	No	11	64	48	15	89	77
	Yes	18	52	45	42	57	52
FSC is advisory[2] only	No	4	48	29	7	54	50
	Yes	21	55	50	43	56	50
FSC: number of voting members	High[3]	17	58	53	38	57	51
	Low[3]	8	43	32	14	44	40

[1] For first measures: number of days since first cases of Covid-19 reported (respectively, since first restrictions taken) in country. For subsequent measures: since previous measure. [2] FSC has hard policy powers beyond and advisory/coordination role. [3] Above (below) the median value of 4.

Sources: IMF policy tracker, available from https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19; websites of central banks and other national authorities; Edge and Liang (2020); authors' calculations.

Survival analysis using Edge and Liang's FSC governance proxies Table A9

	MAP responses since first restriction			MIP responses since first restriction			MAP responses since first case			MIP responses since first case		
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)	(XII)
FSC, De Facto	1.261			1.422			1.320			1.448		
	(0.420)			(0.673)			(0.459)			(0.631)		
FSC, Yes	0.884			1.430***			0.838			1.442***		
	(0.103)			(0.152)			(0.096)			(0.158)		
FSC advisory, No		0.752			1.297			0.840			1.300	
		(0.153)			(0.466)			(0.332)			(0.478)	
FSC advisory, Yes		0.863			1.164*			0.848			1.150**	
		(0.220)			(0.0927)			(0.213)			(0.0685)	
FSC, # inst., High			0.955			1.462			0.891			1.480*
			(0.236)			(0.379)			(0.239)			(0.329)
FSC, # inst., Low			0.911			1.352			0.918			1.357
			(0.057)			(0.383)			(0.056)			(0.397)
Population density	0.831**	0.796**	0.809**	1.217***	1.190***	1.209***	0.785**	0.765**	0.766***	1.225***	1.197***	1.216***
	(0.071)	(0.071)	(0.069)	(0.073)	(0.061)	(0.056)	(0.078)	(0.088)	(0.078)	(0.066)	(0.0544)	(0.0492)
GDP per capita	1.001	1.003	1.003	0.991**	0.991**	0.992***	1.002	1.004	1.003	0.990***	0.990***	0.991***
	(0.006)	(0.006)	(0.004)	(0.004)	(0.004)	(0.003)	(0.006)	(0.006)	(0.005)	(0.003)	(0.003)	(0.002)
Hospital beds	1.008	1.013	1.012	0.931***	0.929***	0.932**	1.014	1.019	1.016	0.933***	0.931***	0.934**
	(0.018)	(0.021)	(0.032)	(0.0227)	(0.023)	(0.031)	(0.015)	(0.024)	(0.032)	(0.0217)	(0.0220)	(0.029)
Gov. response	0.993	0.991	0.991	1.021	1.021	1.021	1.001	0.997	0.997	1.020	1.020	1.020
	(0.027)	(0.026)	(0.026)	(0.019)	(0.018)	(0.017)	(0.026)	(0.027)	(0.027)	(0.019)	(0.017)	(0.017)
Americas	1.013	1.169***	1.142*	0.442***	0.408***	0.451***	0.780	0.916	0.916	0.344***	0.306***	0.328***
	(0.141)	(0.055)	(0.081)	(0.062)	(0.101)	(0.093)	(0.183)	(0.127)	(0.212)	(0.096)	(0.108)	(0.081)
Asia	0.440***	0.538***	0.541***	0.862	0.837	0.893	0.448***	0.559***	0.557***	0.646*	0.604*	0.628*
	(0.103)	(0.0648)	(0.0191)	(0.0993)	(0.120)	(0.187)	(0.118)	(0.103)	(0.039)	(0.155)	(0.177)	(0.153)
eurozone	1.393***	1.410***	1.508***	0.736**	0.709*	0.762	1.398***	1.443***	1.477***	0.833	0.808	0.775
	(0.0441)	(0.174)	(0.215)	(0.109)	(0.138)	(0.251)	(0.067)	(0.159)	(0.206)	(0.212)	(0.141)	(0.219)
Other Europe	1.362*	1.442*	1.475***	0.816	0.773	0.838	1.466*	1.542	1.557**	0.585	0.541*	0.565**
	(0.253)	(0.279)	(0.190)	(0.203)	(0.206)	(0.286)	(0.327)	(0.432)	(0.278)	(0.214)	(0.173)	(0.138)
Africa-Middle East	1.177	1.471	1.559	1.212	1.250	1.288	1.115	1.466	1.503	0.654	0.599	0.628
	(0.950)	(1.282)	(1.395)	(0.292)	(0.228)	(0.410)	(0.850)	(1.289)	(1.399)	(0.293)	(0.232)	(0.197)
Observations	91	91	91	122	122	122	91	91	91	122	122	122
Countries	56	56	56	56	56	56	56	56	56	56	56	56

Note: Hazard ratios (exponentiated coefficients) are reported. The estimations are based on hazard regressions using the Gompertz distribution. A constant is included but not reported. Standard errors are clustered by region and shown in brackets. (***, **, *) indicate significance levels on the 1%, 5%, 10% significance level.

List of countries included in the study — Table A10

Country	Region	IAB exists	Country	Region	IAB exists
Israel	Africa & ME	Yes	Greece	eurozone	No
Saudi Arabia	Africa & ME	Yes	Ireland	eurozone	No
South Africa	Africa & ME	Yes	Italy	eurozone	Yes
Argentina	Americas	No	Latvia	eurozone	Yes
Brazil	Americas	Yes	Lithuania	eurozone	No
Canada	Americas	Yes	Luxembourg	eurozone	Yes
Chile	Americas	Yes	Netherlands	eurozone	Yes
Colombia	Americas	Yes	Portugal	eurozone	Yes
Mexico	Americas	Yes	Slovakia	eurozone	No
Peru	Americas	No	Slovenia	eurozone	Yes
United States	Americas	Yes	Spain	eurozone	Yes
China	Asia	Yes	Australia	Oceania	Yes
India	Asia	Yes	New Zealand	Oceania	Yes
Indonesia	Asia	Yes	Bulgaria	Other Europe	Yes
Japan	Asia	Yes	Croatia	Other Europe	Yes
Malaysia	Asia	Yes	Czech Republic	Other Europe	No
Philippines	Asia	Yes	Denmark	Other Europe	Yes
Singapore	Asia	No	Hungary	Other Europe	No
South Korea	Asia	Yes	Iceland	Other Europe	Yes
Thailand	Asia	No	Norway	Other Europe	Yes
Turkey	Asia	Yes	Poland	Other Europe	Yes
Austria	eurozone	Yes	Romania	Other Europe	Yes
Belgium	eurozone	No	Russia	Other Europe	Yes
Cyprus	eurozone	Yes	Serbia	Other Europe	Yes
Estonia	eurozone	Yes	Sweden	Other Europe	Yes
Finland	eurozone	No	Switzerland	Other Europe	Yes
France	eurozone	Yes	Ukraine	Other Europe	Yes
Germany	eurozone	Yes	United Kingdom	Other Europe	No

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