



China's Global Leadership Through G20 Compliance

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Received: 23 August 2020 / Accepted: 24 February 2021
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Abstract

What kind of leadership role is China playing in the G20? How has this leadership role evolved over time, particularly with the recent global crises created by the COVID-19 pandemic? In addition, will China's rising role in providing badly needed global public goods reinforce its rivalry with a declining US, present the opportunity of co-leading with its BRICS counterparts, or mediate and foster co-operative solutions among all? This study seeks to address these critical questions using quantitative analysis based on G20 compliance data since its start in 2008, and especially at the recent Osaka Summit in June 2019 and the emergency virtual summit on March 26, 2020. Specifically, this study analyses China's changing compliance levels over time and across issue areas, in comparison with its key G20 partners (or rivals): the US, India and Russia. Observing China's compliance trends alongside those of other major G20 powers provides important insights into the characteristics, evolution and interactions of China's leadership. This analysis finds that China's leadership role has increased over time but that China remains largely a flexible and co-operative leader. From 2008 to 2018, China's compliance rose while that of the US declined. Overall, China leads more with its BRICS partners than with the US. China's leadership model has been characterized by flexibility and cooperativeness, as China has never led alone, and China's closest compliance companions vary across different issue areas. China and other G20 members' compliance in 2020 largely confirms these trends and the causal strength of the shock activated vulnerability of COVID-19 and members' relevant specialized capabilities in response.

Keywords China · United States · G20 · Compliance · Global governance

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1 Introduction

The global crises created by the COVID-19 pandemic have once again highlighted the world's increasing demand for global leadership and the provision of global public goods. At the same time, questions about China's leadership role resurfaced with greater force as the world became increasingly disillusioned with a retreating United States. As a New York Times commentator remarked in April 2020, "the pandemic sweeping the globe has done more than take lives and livelihoods from New Delhi to New York. It is shaking fundamental assumptions about American exceptionalism—the special role the United States played for decades after World War II as the reach of its values and power made it a global leader and example to the world. Today it is leading in a different way: More than 840,000 Americans have been diagnosed with COVID-19 and at least 46,784 have died from it, more than anywhere else in the world" (Bennhold 2020). Similarly, the Atlantic Council recently observed that "the coronavirus pandemic has put US global leadership at stake." In particular, countries have been waiting to see how effectively the United States deals with the crisis, especially in comparison with other major powers like China (Burrows and Engelke 2020). So far, the results have shown the retreat of American leadership and suggested the rise of China's.

In this context of a potential leadership transition, a series of critical questions arise with regards to China's leadership role: has China been leading and will it continue to lead in providing global public goods? Will China's increasing leadership reinforce its rivalry with a declining U.S.? Will it co-lead with the United States, or with its BRICS partners? And will it foster cooperative solutions among all? Overall, these questions are driven by a desire to visualize and understand China's leadership model. Here we approach these questions through the perspective of China's leadership role in the Group of Twenty (G20) systemically significant states. As a core international summit institution composed of the world's twenty most economically significant powers, China's leadership model in the G20 provides important insights into its leadership model in global governance more broadly. Furthermore, the G20's governance of a wide range of global issues from the economy and development to health, terrorism and climate change provides a platform to examine how China's leadership varies across different subjects.

We begin in Sect. 1 with a summary of the current debate in the literature regarding China's leadership role vis-à-vis a retreating United States, and outline several remaining puzzles. In Sect. 2, we state our thesis and outline our methodology. The bulk of our analysis appears in Sect. 3, which outlines important trends in China's G20 leadership using compliance data from the G20's regular summits from 2008 to 2018. In the first part of this section, we outline at a general level China's overall compliance trends over time and compare them to other G20 members, to provide quantitative evidence for China's rising leadership. In the second part, we focus on the question of who China complies with, and more specifically, whether China complies together with the United States, Russia, or India. By finding China's closest compliance companions through correlating China's compliance data with those of its major G20 partners, we provide quantitative evidence for China's leadership

model and interactions. In Sect. 4, we discuss recent trends in China's leadership, particularly after the shock of the COVID-19 pandemic, using data from the 2019 and 2020 summits. Finally, in the conclusion, we summarize our main findings and propose directions for future research.

2 The Debate and Puzzles

Questions about China's leadership have long inspired a debate among several basic schools of thought about the China–U.S. relationship and China's role in a global governance system and international order long led by the U.S. (Li 2011; Kirton 2016).

One school sees growing competition and ultimately even military conflict, as China's rise and America's decline reproduce the classic “Thucydides trap” that makes war likely between the two (Mearsheimer 2011; Allison 2017; Cooley and Nexon 2020; Kroenig 2020). A second school highlights China's peaceful rise, intensifying international interdependence and resulting vulnerabilities, which generate co-operative solutions with the U.S. and others, upon which the fate of all depend (Pei 2020). A third school sees a blend of conflictual realist rivalry and liberal-institutionalist co-operation, with the foreign policy choices of each major power determining which will prevail (Nye 2020).

In 2020, the deadly global COVID-19 pandemic and its massive economic damage gave a much sharper focus to the debate. Here the first school sees China causing the crisis, failing to co-operate with its G20 and BRICS partners of Brazil, Russia, India and South Africa and the World Health Organization (WHO) and doing less than its fair share to solve the global problem or replace a declining, withdrawing U.S. (Patrick 2020). The second school argues that the 2020 COVID-19 pandemic spurred a stronger Chinese rise and U.S. decline, driven by the “sociopathic” leadership of Donald Trump, the self interest of American business leaders and the collectivist Confucian culture of China, Japan and South Korea (Sachs 2020a, b, c). The third school sees a continuing U.S. need to co-operate with China, but now backed by a broader democratic alliance from a Group of Seven (G7) major democratic powers expanded into a Democratic Ten (D10) (Ikenberry 2020; Fishman and Mohandas 2020).

These debates often overlook two factors central to realist and liberal institutional theory, respectively. The first is how changing relative capabilities among major powers beyond the two leading ones permit and incentivize balancing or bandwagoning behaviour on the part of all, with systemic stability arising if balancing prevails. The second is how international institutions autonomously impact the behaviour of their members, to foster co-operative outcomes. These two factors come together in the critical plurilateral summit institutions of world's leading powers, above all the G20 and its component BRICS and G7 clubs. These institutions have taken centre stage with U.S. president Donald Trump trying to turn the G7 into a “D11” by adding BRICS members' India, Russia and Brazil, to counter China's rise and America's decline. What will this mean for China, and its role in the G20, where

China has long led but always with a partner, who changed as the issues did (Kirton 2016)?

An answer comes from comparing the compliance of China, the U.S., India and Russia with the priority commitments made by the G20 summits from 2008 to 2020. This study thus compares these countries' compliance and closest compliance companions, over the periods of financial crisis from 2008 to 2012, global steering from 2013 to 2019 and the COVID-19 crisis in 2020, across the key subjects of macroeconomic policy, development, climate change and health. It focuses on whether China's compliance levels and companions have changed, in ways that make China more of a leader, and a co-operative leader, over an expanding policy terrain.

3 Methodology and Thesis

3.1 Methodology and Analysis: "Leadership" and the G20

The term "leadership" here builds on the concept of leadership developed by Kirton in *China's G20 Leadership* (2016). It focuses on "the member's necessary place in and contribution to the G20's existence and success, its ability to veto or adjust antithetical initiatives from other members, its shared or unilateral initiatives of a material, ideational, behavioural and institution-building kind, its ability to attract sufficient followers to affect the summit outcome in its desired way, its coalition building, and its willingness to acquiesce on non-priority issues to ensure a collective G20 result" (Kirton 2016 page 12). Specifically, leadership is measured through the quantitative assessment of member countries' behaviour along several dimensions of summit performance.¹

In this study, we focus on one key dimension of performance as an indicator of leadership: the delivery of summit decisions. This is a major aspect of the G20's accountability and contributes critically to its institutional effectiveness. As such, a country's leadership in compliance is an important component of its G20 leadership. This dimension of performance is measured through a quantitative assessment of a members' compliance with G20 summit commitments. The compliance data comes from the 294 G20 summit commitments assessed for members' compliance by the G20 Research Group (2020) and its partners at the Russian Academy of National Economy and Public Administration (RANEPA) (Kirton and Larionova 2018; Rapson and Kirton 2020). To produce this data, their analysts first identified the precise, future-oriented, politically obligatory commitments made publicly by G20 leaders at their summits, then selected the priority ones for compliance monitoring, and finally identified, collected and assessed each members' implementing actions during the time until the next summit was held. The compliance of each member on each commitment was assessed on a three point scale, where +1.00 represents full compliance, 0 represents partial compliance or a work in progress, and -1.00 represents

¹ For details on the dimensions of performance, please refer to John J. Kirton, *China's G20 Leadership* (2016).

no compliance or actions antithetical to those which the commitment specified. With 294 commitments assessed for each of the 20 members over the 13 summits from 2008 to 2018, this core database, supplemented by the compliance results of the 2019 and 2020 summits, is sufficiently robust to support the basic quantitative analyses applied and the inferences drawn here.

In this study, we treat high levels of compliance as a reflection of a country's leadership. We focus specifically on China, examining its compliance levels overall, over time, and by subject, to discern possible areas and trends in its leadership. Theoretically, we further elaborate the concept of leadership to outline several possible leadership scenarios based on two dimensions of the compliance data. The first dimension is based on the absolute compliance level. Here, we ask whether or not other countries have complied at a level that is within a 0.1 range of the scientific score (or 5% of the percentage score), above or below China's compliance level. If a G20 partner has complied within this close range, then it has achieved a similar *level* of leadership as China. The second dimension is based on correlation. Here, we ask whether or not the countries comply together or synchronously by calculating how strongly the partners' compliance data correlates with China's. If there is a weak correlation, then the countries did not lead together in parallel, whereas if the correlation is strong, then the countries led together, in parallel.

These measures produce three possible models of China's G20 leadership. The first is cooperative leadership, which is achieved when China and its compliance partner(s) achieved a similar level of leadership (as determined by close absolute compliance scores) and led together (as determined by strong correlation between their compliance trends). The second is coinciding leadership, where China and its partner(s) did not lead together in parallel (as determined by weak correlation between their compliance trends) but achieved a similar degree of compliance (as determined by close absolute compliance scores). The third is unilateral leadership, where China led alone while the other falls behind (demonstrated by China's singularly high compliance score, with no other members coming close).

To generate findings about China's leadership model, this study compares the compliance of China and its G20 partners, with a particular focus on its potential rival, the U.S., and its key BRICS partners of India and Russia. We draw on compliance data with their leaders' priority commitments made at the G20 summits since its start in 2008, through to the recent regular summit at Osaka in June 2019 and the emergency summit on March 26, 2020. We compare their compliance over time and across the different subjects including development, the economy, climate change and health, to see how the COVID-19 crisis has changed the compliance and thus the good global citizenship and leadership of these Indo-Pacific big four.

3.2 Thesis

This study finds that since 2008 China has been a fully responsible member of the G20, bearing its fair share of the burden of delivering the decisions that the summit leaders collectively make. China's average compliance of 71% was identical to the overall average compliance of all G20 members at 71%, and close to the U.S.

at 73%, India at 69%, and well above Russia at 64%. Overtime, however, China's compliance rose steadily, while that of the US declined. China's compliance rose alongside its BRICS partners, though at a faster pace. By subject, China's leadership is most pronounced on terrorism and macroeconomic policy.

China's leadership model is characterized by flexibility and cooperation. First, the cooperative nature of China's leadership is evident as China has never led alone. In the first phase of China's leadership from 2008 to 2012, before President Xi's arrival, China led together with both the US and the BRICS. Since the Xi era started in 2013, China no longer led with the US, but it still led with other partners such as Russia, Brazil and its East Asian neighbours of Japan and South Korea. Second, the flexible nature of China's leadership is demonstrated by China's changing compliance companions across different subjects. In some areas such as terrorism and international taxation, China led with the US, India and Russia all together. In other areas such as macroeconomics and information and communications technology (ICT), China led with its BRICS partners while the US fell behind. Still in other issue areas, such as health and financial regulation, China led together with the US while the BRICS fell behind.

More recently, G20 members' compliance with the pre-COVID-19 commitments made at the Osaka Summit on June 28–29, 2019 averaged 69% by May 20, 2020, with six months left before the regular Riyadh Summit on November 20–21, 2020. Here, China ranked 8th with an average compliance of 58%, after the United States, India and Russia. Yet with the fully focussed COVID-19 commitments at the G20's emergency summit on March 26, 2020, compliance two months later already averaged 72%. China was at 73%, far above the U.S. at 59% and India and Russia at 55%. Thus, the COVID-19 crises made China more of major power leader on its own, bearing its fair share of the proliferating global governance burden, while the U.S., India and Russia withdrew.

Most recently, by October 10, 2020, compliance with all the priority Osaka commitments had risen to 71% for China and the US, 74% for Russia and 79% for India. All G20 members' complied completely with the health commitment on emergency health preparedness. On the other health commitment on ageing populations, China led with 100%, while the other "big four" followed with only 50%. When compared to compliance by May with both the Osaka and emergency summit commitments, China also led temporally, by going first and fast with full compliance before the others. This suggests that shock-activated vulnerability and relevant specialized capabilities caused compliance, as COVID-19 struck first and most in China, which had controlled it completely by September, while it later struck the U.S., Russia, India and Brazil, which had not controlled it by the end of 2020.

4 China's G20 Leadership, 2008–2018

4.1 General Leadership Trends

G20 compliance data reveal several important trends and characteristics of China's role in the G20, and provide insights into questions regarding whether or not China

can be considered a leader in the G20, in what way and in which subjects China is leading, who China is leading with, and how China's leadership has developed and evolved over time.

4.1.1 China's Overall Compliance Level: A Responsible Contributor

In the G20's overall compliance ranking based on compliance data from 2008 to 2018, China's overall average compliance of 71% (or +0.41 on the scientific scale) ranks 9th out of all G20 members. Being slightly above the middle of the ranking, China is not an overall G20 compliance leader, but is more accurately characterized as a fully responsible member of the G20, bearing its fair share of the burden of delivering the decisions that the leaders collectively make. China's overall compliance is identical to the overall G20 compliance average among all G20 members of 71% and almost as high as the G20's co-founder, the United States at 73% (or +0.46 on the scientific scale) (Kirton 2013) (see Appendices A and C).

China's overall compliance level lags behind the G20's top compliance leaders. G20 compliance is led by OECD-member countries, and specifically by G7 countries. The UK ranks first with an overall average compliance of 84.5%, followed by Germany and the EU in second place with an average compliance of 83.5%, Canada in third place with an average compliance of 83%, Australia in 4th place with an average compliance of 82.5%, France in 5th place with an average compliance of 79.5%, Korea in 6th place with an average compliance of 74.5%, Japan in 7th place with an average compliance of 73.5%, and the US in 8th place right above China, with an average compliance of 73% (see Appendix C-1).

However, China's overall compliance stands out as the top ranking non-OECD, developing country in the G20's compliance ranking. The eight countries (in addition to the EU) that rank ahead of China in compliance performance are all developed countries, are all members of the OECD, and are mostly members of the G7. China ranks ahead of all other non-OECD, developing country members of the G20 and in this sense, is a leader of the developing country bloc of the G20. China also ranks above all of its BRICS partners, as India and Brazil rank in 10th place with an average compliance of 69%, Russia ranks in 13th place with an average compliance of 64%, and South Africa ranks in 14th place with an average compliance of 62% (See Appendix C-1).

4.1.2 China's Compliance Over Time: Rising Leadership

Analysing the data at a macro-level using overall compliance across all subjects, several trends stand out. The first trend is the steady rise of China's overall G20 compliance over time. The second is that China's rising compliance coincides with America's declining compliance. The third is that China's rising compliance parallels the rising compliance of its major BRICS partners India and Russia, though the latter two rose at a much slower pace than China.

China's overall compliance reliably rose through three phases. The first phase is from 2008 to 2013, when the G20 was dealing primarily with the global financial crisis. During this period, China's compliance averaged 66% over eight summits,

with a low of 50% at London in April 2009 and a high of 75% at Toronto in June 2010. The second phase from 2014 to 2017 is marked by China's sustained rise. It began in 2014, a year before China joined the G20's governing troika in 2015 as the incoming host for its Hangzhou Summit in September 2016. It also came soon after Xi Jinping consolidated his power as China's president. From 2014 to 2017, the financial crisis-free years, China's compliance steadily rose to 74% over four summits, including a low of 66% at Hamburg in 2017 and a high of 77% at Brisbane in 2014. The third phase began at the Buenos Aires Summit in November 2018, when China's compliance soared to 88%, well above the 79% average of all members for that year. Overall, China's compliance trend over time is marked by a modest but solid start at 66%, a steady rise in the post-financial crisis era, and a surge in compliance recently in 2018.

China's rise coincided quite closely with America's decline. During the first phase from 2008 to 2013, U.S. compliance averaged 74%, well above China's 66%. The U.S. lead in compliance during this first phase coincided with and was caused by shock activated vulnerability from the American-turned global financial crisis and the ensuing European crisis (Kirton 2013). The 2008 financial crisis spurred a highly vulnerable U.S. to create the G20 summit, and energetically shape the G20's commitments and U.S. compliance with them at the two summits it hosted at Washington D.C. in 2009 and Pittsburgh in 2009, and the four its G7 or OECD partners did at London in April 2009, Toronto in June 2010, Seoul in November 2010 and Cannes in November 2011 (Kirton 2013). Towards the end of this first phase, US President Obama also helped the G20 Summit turn to broader global issues, such as climate change and later health. However, during the second phase from 2014 to 2017, US compliance dropped slightly to 73%, while China's compliance steadily rose. During this phase, the US reached a low of 58% compliance in 2017, which coincided with the arrival of US President Donald Trump. Finally, in 2018, at Trump's second G20 summit, while China's compliance soared to 88%, US compliance was only 69%.

China's rising compliance paralleled the rising compliance of its major BRICS partners, India and Russia. In the first phase from 2008 to 2013, India's average compliance was 62%, and Russia's average compliance was 64%. Both were slightly below China's average compliance of 66% then. In the second phase from 2014 to 2017, both India and Russia's compliance increased alongside China's. India's compliance soared from 62 to 72%, and Russia's compliance increased more modestly from 64 to 66%. Finally, in 2018, China's surge in compliance to 88% coincided with a modest increase in India's compliance from 72 to 73%, and a more substantial increase in Russia's compliance from 66 to 73%. Throughout these three periods, China's compliance was always higher than India's and Russia's was (Fig. 1).

4.1.3 China's Subject-Specific Leadership

To identify and account for China's subject-specific leadership, G20 compliance data was disaggregated by subject. First, focussing on China's compliance record alone, its highest compliance level was achieved on terrorism (with 100% average compliance), followed by macroeconomics (87%), ICT (84%), and financial

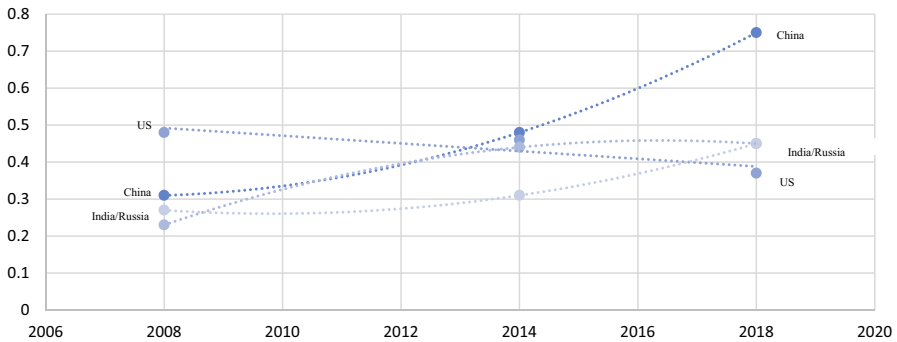


Fig. 1 Compliance trends over time

regulation (79%). Second, looking at the G20 as a whole, China's compliance leadership is most evident on terrorism where it ranks first with 100% compliance along with several G7 members (France, Germany, Italy, the US and the EU) in addition to Argentina, Korea, and Russia, and macroeconomic policy, where China's compliance of 87% ranks fifth among all G20 members.

China's compliance leadership on terrorism stands out, not only because it has achieved full compliance on all assessed commitments on the subject, but also because it is one of the few subjects where China ranks alongside the G20's traditional G7 compliance leaders. This subject-specific leadership aligns well with China's domestic policy preferences, and also reflects China's increasing role in global counter-terrorism. Specifically, one of the main domestic motivating factors in China's leadership on counter-terrorism arises from the threats coming from the Xinjiang region. Terrorism in Xinjiang first arose in the 1990s with the rise of the Uyghur Separatist Movement. After an era of repression, there was a resurgence of terrorist activities, taking on more intense and innovative forms such as suicide bombings, especially in the years leading up to the 2008 Beijing Olympics. These activities persisted thereafter and culminated, in 2014, in some of the deadliest terrorist attacks in mainland China (Tschantret 2018). As a result, China implemented a range of domestic policies. Under the Xi Jinping administration, China launched a new strategic plan for Xinjiang in 2013, the "Strike Hard" campaign in 2014, a new National Counterterrorism Law in 2015, and an Internal Security Strategy in 2017–2018. Increasing attention and efforts to deal with terrorism is also reflected in the increased domestic security spending from 5.45 billion RMB in 2007 to almost 58 billion RMB in 2017 (Greitens et al. 2020). Furthermore, China's counter-terrorism efforts globally also increased in recent decades and years. In 1996, China, Russia, Tajikistan, Kyrgyzstan and Kazakhstan founded the "Shanghai Five," which in 2001 with Uzbekistan's addition, became the Shanghai Cooperation Organization (SCO). The SCO to this day remains an important regional organization which facilitates counter-terrorism cooperation in the region (Wang and Kong 2019). Beyond cooperation with neighbouring countries, China has addressed counter terrorism along with international partners and in international platforms, as counter-terrorism remains one of the greatest areas of convergence in interests between China and

other major international powers. Particularly since the 9/11 incident, China has engaged in an effort to take part in the international dialogue surrounding terrorism, to position itself as a victim of terrorist attacks alongside other major powers like the US, and has increasingly stressed the global dimension of terrorism and the importance of international counter-terrorism cooperation (Panda 2006). In this context, the G20 provides a platform for China to internationalize its counter-terrorism strategy, and China's leadership in the G20's governance of terrorism reflects its longstanding domestic concerns and the international orientation of its counter-terrorism efforts.

A second area where China leads is macroeconomic policy, where China's compliance of 87% ranks fifth after Canada in first place, Germany in second, the EU in third, Australia in fourth, and China tied with Russia in fifth. As one of the founding missions of the G20, macroeconomic policy cooperation has always been one of the central priorities of the summit institution. When the G20 leaders' level summit was formed in response to the financial crisis in 2008, China played an important role in supporting the G20's institutional evolution and providing exchange rate stability and a substantial share of the G20's monetary and fiscal policy stimulus. Using its formidable economic and financial power, China was a major provider of public goods since the G20's start, and much of its public goods provision was done through its exchange rate and fiscal and monetary policy. China's provision of macroeconomic stimulus at the G20 summit's start was an attempt to protect its own export-dependent economy, which has become increasingly inseparable from the global economy, from the global economic downturn that began in 2008 (Kirton 2016). Particularly since the reform era, economic growth has been essential to China's social and political stability, as well as the leadership's legitimacy. The importance of macroeconomic policy cooperation has only increased since the G20's founding as China has continued to deepen its links with the global economy in recent years. Thus, in response to the European financial crisis, China replaced the US in its role as the lender of last resort, taking on an even more significant leadership role in global economic governance. Finally, with the arrival of Xi, the G20 continued to be a reflection of China's increasing role in global economic governance, for example, with China becoming the largest contributor to the growth-enhancing commitments of the 2014 Brisbane Action Plan (Kirton 2016). The Xi era has also revealed a more assertive China that is increasingly willing to play a leadership role in governing the global economy. For example, at the 2017 World Economic Forum in Davos, Xi's speech presented a strong defence of globalization and outlined China's readiness to "vigorously foster an external environment of opening-up for common development" through advancing free trade networks, and through institutional initiatives like the Belt and Road (Xi 2017). Similarly, at the 2018 Boao Forum, Xi outlined China's vision to build a "community with a shared future for mankind" which is built on a commitment to openness and connectivity, an open economy, multilateral frameworks, trade and investment liberalization and a continued promotion of globalization (Xi 2018). Thus, China has recently stepped into the position of the defender of the open global economy, filling the void left by the US retreat from globalization and global leadership. Overall, China's subject-specific leadership in macroeconomic policy reflects the increasingly interdependent

relationship between China's economy and that of the global economy, as well as China's increasing willingness to contribute in a substantial way to global economic governance.

4.2 China's Leadership Model and Compliance Companions

Building on the observation of China's increasing G20 leadership, we next examine China's leadership style by looking at whether China leads alone or with others (and with whom). Building on the leadership concept and models outlined earlier (see Table 1), we determine whether China's compliance level is close to those of other G20 members, and whether there exists a strong correlation between China's compliance trends and those of its close compliance companions. We pay particular attention to the US, the world's first ranked power and the subject of the current international leadership transition, as well as China's neighbouring and most powerful BRICS partners, Russia and India (Table 2).

4.2.1 Overall Compliance Companions

China's overall compliance of 71% is close to both the US (at 73%) as well as its BRICS partner, India (at 69%). However, overall compliance correlations show that China does not comply closely with the United States. There is a weakly positive correlation, with a coefficient of +0.14, between China's compliance from 2008 to 2018 and US compliance during the same period. On the other hand, China complies moderately closely with its BRICS partners. It has a moderately positive correlation with Russia at +0.50 and with India at +0.44. Beyond these key partners, it also has a moderately positive correlation with the other BRICS member, Brazil, at +0.47, but not with South Africa, which has a negative correlation of -0.32 with China (see Appendix B). As China's level of compliance consistently surpasses that of its BRICS partners, China leads the BRICS. China's higher compliance leadership flows from its much higher relative capability, which exceeds that of all the other BRICS countries combined (see Appendix F).

4.2.2 China's Changing Compliance Companions Before and After Xi

Next, we disaggregate the compliance data and conduct further analysis to see if China's closest compliance companions changed over time. We use the arrival of Chinese President Xi Jinping as a dividing point between two periods. G20 compliance data was thus divided into two data sets: the first set covers compliance data from 2008 to 2012, the summits before Xi's arrival, and the second set covers from 2013 to 2018, the summits during the Xi era. We then determine China's overall compliance companions, which include those G20 members who have the closest average compliance to China. Any country scoring within a 0.10 range (in the scientific score, equivalent to 5% of the percentage score) above or below China's average compliance counts as a close compliance companion. We then conduct correlations between China's compliance and those of its closest compliance companions,

Table 1 Leadership models

		Correlation (whether or not the countries comply together/synchronously)	
		Strong correlation (> 0.50)	Weak correlation (< 0.50)
Compliance level (whether or not the countries achieved a similar level of leadership, measured by average compliance level)	Within ± 0.1 (5%) of China's compliance score	Cooperative leadership Countries achieved a similar degree of leadership and led together/in parallel	Coinciding leadership Countries did not lead together/in parallel, but achieved a similar degree of leadership
	Not within ± 0.1 (5%) of China's compliance score	Unilateral leadership One country leads with high compliance while all others fall behind	

Table 2 Compliance trends over time

Country	Average compliance (%)			
	Phase 1 (2008–2013)	Phase 2 (2014–2017)	Phase 3 (2018)	Overall average (2008–2018)
China	66%	74%	88%	71%
United States	74%	73%	69%	73%
India	62%	72%	73%	69%
Russia	64%	66%	73%	64%

See Appendices for raw compliance data tables

in addition to its key partners of the US, Russia and India (if they are not already in the list of companions).

In the pre-Xi period from 2008 to 2012, China's average compliance was 67%. Its average compliance was closest (within a ± 0.10 range from the compliance score) to its BRIC partners of Brazil, Russia and South Africa, in addition to Italy and Mexico (see Appendix D). Next, a series of correlations were conducted between China and the countries with the closest average compliance, in addition to its key partners. Interestingly, China's compliance had the strongest positive correlation with Italy with a correlation coefficient of +0.74, followed by the US with a coefficient of +0.67, India at +0.59, Mexico at +0.57, Brazil at +0.52 and Russia at +0.42. As such, during the pre-Xi period, China was both a loyal companion to its developing country partners, and at the same time a loyal partner to its G7 counterparts, the US and Italy. In terms of its leadership model, China led cooperatively alongside its alleged rival, the US, as well as its BRICS partners.

In the Xi era from 2013 to 2018, China's compliance increased to 73%. Its closest compliance companions included its two BRICS partners of Brazil and India, but now also included three G7 countries—Italy, and the global Pacific powers of the U.S. and Japan, in addition to its neighbour Korea (see Appendix D). A similar set of correlations were conducted, and the results showed that China had the strongest positive correlation with Korea with a coefficient of +0.79, followed by Russia at +0.75, Japan at +0.70, and Brazil at +0.56. Importantly, China's compliance correlation with the US dropped to -0.06 , and dropped to -0.11 for India. Thus, during this period, China no longer complied together with the US and India, and instead complied with its other BRICS partners of Russia and Brazil, in addition to its East Asian neighbours of Japan and South Korea. In terms of its leadership model, China led cooperatively with its BRICS partners of Russia and Brazil, and its East Asian neighbours of Japan and Korea.

4.2.3 China's Compliance Companions by Subject

China's compliance and its closest compliance companions could also change by subject. As such, we next disaggregate G20 compliance data by subject, and conduct

similar calculations to compare China’s compliance with its key partners and run correlations within each subject (see Fig. 2).

Overall, China leads with different partners across different subjects, and China does not lead alone. First, looking at the subject-specific compliance of China and its main G20 partners of the US, Russia and India, one notable feature is the substantial degree of overlap in the subjects that achieved the highest compliance among these key powers. As summarized above, China achieved the highest compliance on the subjects of terrorism (at 100%), macroeconomics (at 87%), ICT (84%), financial regulation (79%) and international taxation (77%). The US achieved its highest compliance in terrorism, microeconomics and infrastructure (at 100%), followed by health (at 87%) and gender (at 82%). India achieved its highest compliance on microeconomics (at 100%), terrorism (at 88%), macroeconomics (at 84%), ICT (at 84%) and labour/employment (at 81%). Finally, Russia achieved its highest compliance on terrorism, infrastructure and international cooperation (at 100%), macroeconomics (at 87%) and ICT (at 84%) (see Appendix E-1).

In China’s strongest performing subject of terrorism, its average compliance of 100% was equal to Argentina, France, Germany, Italy, Korea, Russia, the US and EU. Since all of these countries complied fully with all terrorism commitments, there was +1 correlation between all of these partners. As such, China led cooperatively with both its BRICS partner, Russia, in addition to its G7 partners including the US, and also Argentina and Korea (see Appendix E-1).

On China’s second strongest subject of macroeconomics, its average compliance of 87% was closest (within ± 0.10 or 5% of the compliance score) to Australia, India, Russia, the UK and the EU. However, China’s macroeconomic compliance had weak correlations with its G20 partners. The highest positive correlation was with Russia, with a coefficient of +0.19. As such, China demonstrated coinciding, rather

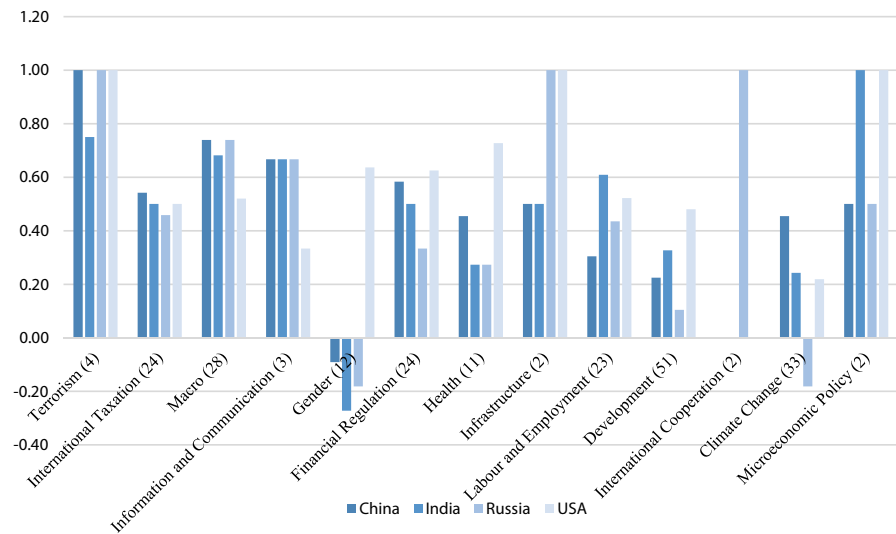


Fig. 2 Compliance companions by subject

than cooperative leadership with its BRICS partners and G7 partners in macroeconomics (see Appendix E-1).

On China's third strongest subject of ICT, its average compliance of 84% was equal to Argentina, Australia, Brazil, France, Germany, India, Indonesia, Mexico, Russia, Turkey and the UK. In addition, there was strong, +1 correlation between China and all of these compliance companions (with the exception of the UK). Again, similar to terrorism, China led cooperatively with a wide range of partners from both the G7 and the BRICS (see Appendix E-1).

On China's fourth strongest subject of financial regulation, its average compliance of 79% is closest to Brazil, Canada, India, the UK and the US. There is also a strong correlation between China's compliance trend and that of Brazil (with a coefficient of +0.67), Canada (at +0.66) and India (at +0.56). In contrast, correlations between China and the UK and US are very low. As such, while there is coinciding leadership among China and the US and UK, China also led cooperatively with its BRICS partners of Brazil and India, and interestingly, with Canada as well (see Appendix E-1).

On China's fifth strongest subject of international taxation, its average compliance of 77% is closest to Argentina, Canada, India, Italy, Korea, Mexico, Russia, South Africa and the US. However, here, China's compliance trend only had a strong correlation with Argentina (with a coefficient of +0.63) and Italy (with a coefficient of +0.62). As such, China led cooperatively with unconventional partners, in addition to exhibiting coinciding leadership with G7 counterparts including the US and its BRICS partners (see Appendix E-1).

Overall, China's compliance companions varied across subjects, and China exhibited a mix of leadership styles. Cooperative leadership arose on terrorism, ICT, financial regulation and international taxation, with a wide range of partners including the US, its BRICS partners, as well as other G7 countries. At times, China also demonstrated coinciding leadership alongside its cooperative leadership. Finally, there were no instances of unilateral leadership. In all of China's top performing issue areas, its overall compliance score was matched by a variety of other members whose average compliance in those subjects falls within a ± 0.1 (5%) range of China's compliance score.

4.2.4 China's Compliance Companions in the G20's Key Subjects

Finally, a series of hypotheses were tested with respect to key subjects that most tightly match the G20's dual distinctive foundational mission of promoting financial stability and making globalization work for the benefit of all. China, long a developing country and identifying itself as the leader of the developing world, traditionally publicly emphasized the second mission and the subject of development (Kirtton 2016). On development, China should thus comply most closely with its BRICS partners who also largely identified themselves in the same way. However, as China rose as a major global economic power, especially after the financial crises from 2008 to 2012, it could well have shifted its priorities in practice to financial stability, by increasing compliance on macroeconomic policy, and changed its closest compliance companions here too. More recently, it could have further shifted to emphasize

the G20's emerging priorities of climate change and health, especially after U.S. president Donald Trump announced U.S. withdrawal from the Paris Agreement on climate change in 2017 and from the WHO in 2020. To test these hypotheses, we look more closely at China's compliance data on the subjects of macroeconomics, development, climate change and health. China's compliance over each of the 13 summits in these subjects was correlated with those of the countries with the closest average compliance.

On macroeconomics, as summarized above, China's overall compliance of 87% was closest to Australia, India, Russia, the UK and the EU. However, China's macroeconomic compliance had weak correlations with its G20 partners. The highest positive correlation was with Russia, with a coefficient of +0.19 (see Appendix E-2).

On development, China's overall compliance of 61% was closest to Brazil, Italy, Korea and Turkey. China's development compliance also had stronger positive correlations with its G20 partners. The correlation between China's development compliance over time was highest with Turkey and Brazil with a correlation coefficient of +0.66. These results suggest that to a moderate degree, China complied together with smaller developing countries on development, and not with its key partners (see Appendix E-2).

On climate change, China's overall compliance average was 73%, and was closest to Japan and Mexico. Even though its overall compliance level was relatively further from its key G20 partners, there was a strong positive correlation between China's climate change compliance and that of Russia with a correlation coefficient of +0.79, followed by a positive correlation with the US at +0.76, Japan at +0.73 and Mexico at +0.46 (see Appendix E-2).

Finally, on health, China's overall compliance of 73% was closest to Australia, France, Japan, Korea and South Africa. In addition, China's health compliance has a strongly positive correlation with many of its G20 partners, including France with a strongly positive coefficient of +0.99, followed by Japan at 0.97, Brazil at 0.96, Korea at 0.92, the US at 0.89, South Africa at 0.82, and Russia and India at 0.65. These results suggest that in the key G20 issue areas of development, macroeconomics and health, China is a cooperative leader which complies closely with its BRICS partners, the US and its wider range of G7 partners (see Appendix E-2).

Thus, with the exception of macroeconomics, China tends to comply with a wide range of partners, including both the US and its BRICS counterparts, in the G20's core, distinctive subject of development, and its emerging priorities of health and climate change.

4.2.5 China's Pre-Xi and Xi Era Compliance Companions in the G20's Key Subjects

The subject-specific data was further disaggregated into the pre-Xi and Xi era to account for changes in China's subject-specific compliance companions across the two periods.²

On macroeconomic policy, during the pre-Xi era from 2008 to 2012, China's average compliance was 82%, which is closest to that of France, India, Indonesia, Korea, Mexico, Saudi Arabia, and South Africa. Of these compliance companions, China led cooperatively with Mexico (with a correlation coefficients of +0.61) and coincidingly with the others. During the Xi era from 2013 to 2018, China's macroeconomics compliance increased to 92%, the highest among all G20 members, and was closest to Canada, Germany, India, and the EU. However, during this time, China did not lead cooperatively with any of its compliance companions, but instead exhibited coinciding leadership (see Appendix E-3).

On development, before Xi's arrival, China's compliance averaged 62% and its closest compliance companions were Brazil, India, Italy and Turkey. It led cooperatively with Brazil and Turkey (with correlation coefficients of +0.55 and +0.60, respectively.) After Xi's arrival, China's average compliance dropped slightly to 60% and its closest compliance companions were Brazil, Indonesia, Italy, and Korea. However, there was no strong correlation between China's compliance trend and any of these compliance companions. China had only coinciding leadership here (see Appendix E-3).

On climate change, China's compliance in the pre-Xi era averaged 77% and its closest compliance companions were Canada, France and Korea. During this time, it led cooperatively with Canada (with a correlation coefficient of +0.68), while there was also coinciding leadership between China, France and Korea. During the Xi era since 2013, China's climate change compliance dropped to 70%. Its closest compliance companion was Indonesia, and there was coinciding leadership (see Appendix E-3).

5 China's G20 Summit Compliance 2019–2020

The COVID-19 pandemic, which began in China in December 2019 and engulfed the U.S., Brazil, India, Russia and the world by the summer of 2020 was a major shock for G20 governance and the commitments and compliance it produced. The COVID-19 shock was sufficiently surprising, strong, sustained and widespread to change China's compliance and its closest compliance companions, as the subject of health took centre stage. Six months after COVID-19 erupted, these changes in G20 governance started to appear.

² This section includes only macroeconomics, development and climate change. Health is excluded because compliance data for health is only available in the post Xi era.

5.1 Osaka Summit Compliance

The first changes arose in G20 members' compliance through to May 20, 2020 with the 19 priority commitments made at the G20's regular Osaka Summit on June 28–29, 2020. Compliance with them during the subsequent eleven months, including six months before and five months after COVID-19 erupted, averaged 69% (see Appendix G). This was a little below the G20's all time final compliance average of 71%. With six months left before the Riyadh Summit on November 21–22, 2020 and with the COVID-19 catalysed crises proliferating, final compliance with the Osaka commitments was likely to surpass the 71% average and even reach the 79% level of the Buenos Aires Summit on November 30–December 1, 2019 (see Appendix G-1).

During the first 11 months after Osaka, China ranked 8th with average compliance of 58% alongside Argentina, South Africa, Brazil and Indonesia, after the United States ranking 7th with average compliance of 61%. India ranked 3rd at 79% and Russia 5th at 66%. This suggested China's closest companion had become the U.S., but now as a low level laggard in the G20 group (see Appendix G-1).

China's compliance level and companions varied by subject. On macroeconomic policy, China and Brazil had 50%, the U.S. 75% and India and Russia 100%. On development, China and the U.S. led together with a perfect score of 100% each, while India and Russia had 75%, and Brazil 50%. On health, China, the U.S., India and Russia had 75% and Brazil 50%. On climate change, China, the U.S., Brazil and Russia had 75%, while India led at 100%. As its closest compliance companions, China thus chose the U.S. alone on development at a high level, the U.S. and BRICS powers on health and climate change at a substantial level, and Brazil on macroeconomic policy at a very low level.

5.2 The March 2020 Emergency Virtual Summit

The pure impact of the COVID-19 crisis was seen in China's and other G20 members' compliance with the commitments made at the G20's emergency virtual summit on March 26, 2020, called to respond to the COVID-19 pandemic alone (Kirtton and Warren 2020a). The summit produced 47 commitments. They were heavily focussed on health, with 22 core health commitments and six health-related ones.

A mere two months after the emergency summit, average compliance with its 11 priority commitments, as assessed by the G20 Research Group and its partners at RANEP, averaged 72% (see Appendix G-2). China had above average compliance of 73%, while the U.S. had only 59% and India and Russia an even lower 55% each. Within the G20 as a whole, the highest compliance came from Germany at 95%, Japan, Australia and Canada at 91% each, and the EU at 86%. Among the four Indo-Pacific powers, China thus led alone in bearing its fair share of the global governance burden to cope with the current COVID-19 catalysed crises, even as the U.S., India and Russia fell far behind. More broadly, China's compliance of 73% was identical to the United Kingdom's and the current G20 host of Saudi Arabia's at 73% (see Appendix G-2).

Across the summit's key subjects, China's leadership was widespread. China fully complied with six of the 11 assessed commitments—those on WHO strengthening, epidemic preparedness, fiscal support, debt vulnerability, job and income protection, and the trade flow of goods and services. It partially complied with four commitments, those on health research and development, economic policy tools, trade interference, and supporting international organizations. It did not comply with only one commitment—that on digital health. China thus was largely a leader across the board.

All the four Indo-Pacific major powers fully complied with only two of the 11 commitments—those on economic fiscal support, and on jobs and income protection. The COVID-19 crises created no full “G4” to comprehensively lead the world (see Appendix G-2).

Across all 11 commitments, China tied with the U.S. on five, led the U.S. on four, and lagged the U.S. on two (digital health technology and economic policy tools). Thus, their global co-leadership narrowly prevailed, with China doing more than the U.S. to produce the needed global public goods. China joined the U.S. alone with full compliance on two commitments, those on epidemic preparedness and on debt vulnerability (where India and Russia partly complied). China and the U.S. joined to fully comply with four of the 11 (or 36%) of the commitments, with three on the economy and one on health. China led alone with full compliance on one commitment, that on the trade flow of goods and services (while all the others partially complied). China and India had full compliance on WHO strengthening, while Russia complied partially and the U.S. not at all. China and Russia never joined to fully comply alone (see Appendix G-2).

This suggests that after the COVID-19 crisis struck in 2020, China's major power leadership and good citizenship in the G20 rose, while that of the U.S., India and Russia plunged. Yet when high compliance is combined with high relative capability, the leadership to conquer the COVID-19 catalysed crises must come from China, the U.S. and India together, along with the weighty high compliers of Japan, Germany and the EU (See Appendix G-2).

6 Conclusion

This analysis of China's G20 compliance performance shows that China has become a major G20 leader, but remains a largely cooperative, rather than a singularly dominant, unilateral one (Kirton 2016). Overtime, China has transitioned from a responsible contributor to the G20 into a steadily rising leader and provider of global public goods. China's compliance rose steadily, while that of the US gradually declined and fell behind. China's compliance also rose alongside its BRICS partners Russia and India, though at a faster pace. In the pre-Xi era from 2008 to 2012, China complied closely with both the US and its BRICS partners. However, in the Xi era since 2013, China no longer led with the US, but instead with Russia, Brazil and its East Asian neighbours of Japan and South Korea. As such, in general, China has been leading increasingly with its BRICS and OECD partners and less with the US.

By subject, China's compliance leadership was most pronounced in terrorism and macroeconomics. China leads with different partners on different subjects, though in all areas, China does not lead alone. On terrorism, financial regulation and international taxation, China leads with both its BRICS partners as well as the US, alongside other unconventional partners. In macroeconomics and ICT, China led with its BRICS partners while the US fell behind. Across different subjects, China exhibited an overlapping configuration of cooperative and coinciding leadership styles.

The advent of the COVID-19 catalysed crises in 2020 generally strengthened these trends. Eleven months after the G20's Osaka Summit in July 2019, compliance with its priority commitments made China's closest compliance companion the United States, with the two powers leading at high levels on development, climate change and health, along with a few other Indo-Pacific and global powers too. In May, a mere two months after the G20's COVID-19 focussed emergency summit on March 26, 2020, compliance with its priority commitments among the four Indo-Pacific major powers saw China lead alone, while the United States, India and Russia lagged far behind. Yet when compliance and relative capability are combined, China and the G7 members of the United States and the full European Union, backed by India, Japan and Germany must co-operate to lead G20 in the compliance needed to conquer the unprecedented crises the world now confronts.

Moreover, by October 10, 2020, compliance with the priority Osaka commitments had risen to 71% for China and the US, 74% for Russia and 79% for India. With the health commitment on emergency health preparedness, all of these four major powers had complete compliance. With the other health commitment on ageing populations, China led in the level of its compliance with 100%, while the other three had only 50%. When comparing compliance in May with the health-focussed commitments of the March 26th emergency summit, this shows that China led temporally, by going first and fast with full compliance before the others. It also shows that shock-activated vulnerability and relevant specialized capabilities caused compliance, as COVID-19 struck first and most in China, which it had controlled completely by September, while it later struck the U.S., Russia, India and Brazil, which had not controlled the pandemic by the end of 2020. As the aged are more vulnerable to COVID, China's uniquely high compliance with the commitment on ageing populations confirms its singular leadership, and its standout vulnerabilities and capabilities that caused this.

Further research using detailed process tracing of the strategy and decision-making within China, the US, India and Russia could further test the tight causal path. A more specific examination of general and relevant subject-specific shocks, vulnerabilities and capabilities of the four major Indo-Pacific powers would further test the causal claims. Also useful would be correlating China's instances of low compliance with those of its G20 partners and correlating China's compliance with them for the COVID-era compliance with more commitments from the Osaka and March 26th, 2020 summits, and conducting the compliance assessments necessary for this task.

More broadly, further research could usefully address several important questions well beyond the scope of this tightly focussed study. These include a more detailed look, over a longer period including the G20's Riyadh Summit on November 21–22,

2020, at whether the G20 summit does, can and should serve as an appropriate and adequate forum for major powers to address and act on global crisis such as COVID-19, climate change and the link between the two (Kirton and Warren 2020b). It could further assess the impact on the compliance patterns reported here of such important factors as the G20's co-operation and relationship with the world's major multilateral organizations, starting with the IMF on macroeconomic policy, the World Bank on development, the World Trade Organization on trade and the WHO on health (Rapson and Kirton 2020). Finally, it could explore in detail China's strategy for its G20 diplomacy in different subjects and overall.

Appendix A: Indo-Pacific Powers' G20 Compliance by Summit

Year/summit	Average (all members)	China	Russia	India	United States
Washington, November 2008 ($N=8$)	0.51	0.33	0.67	0.33	0.56
London, April 2009 ($N=8$)	0.13	0.00	0.00	- 0.38	0.13
Pittsburgh, September 2009 ($N=16$)	0.34	0.40	0.06	- 0.20	0.69
Toronto, June 2010 ($N=16$)	0.40	0.50	0.21	0.15	0
Seoul, November 2010 ($N=42$)	0.34	0.28	0.08	0.38	0.37
Cannes, November 2011 ($N=24$)	0.44	0.43	0.35	0.48	0.39
Los Cabos 2012 ($N=21$)	0.54	0.42	0.53	0.58	0.68
St. Petersburg 2013 ($N=25$)	0.37	0.12	0.24	0.52	0.60
Brisbane 2014 ($N=28$)	0.42	0.54	0.48	0.32	0.71
Antalya 2015 ($N=24$)	0.42	0.50	0.29	0.54	0.63
Hangzhou 2016 ($N=30$)	0.44	0.53	0.37	0.53	0.33
Hamburg 2017 ($N=31$)	0.41	0.32	0.13	0.35	0.16
Buenos Aires 2018 ($N=20$)	0.57	0.75	0.45	0.45	0.37
Overall ($N=294$)	0.41	0.41	0.28	0.38	0.46

Appendix B: China's G20 Compliance Correlations (All Subjects, Over Time)

Country compliance datasets	Correlation coefficient
China-US	0.14
China-Russia	0.50
China-India	0.44
China-Brazil	0.47
China-South Africa	- 0.32

Appendix C: All Members Compliance by Summit

Summit	Average	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union
Washington, 2008 Crisis Summit (N=8)	0.51	0.11	0.78	0.88	0.56	0.33	0.67	1.00	0.33	0.11	0.22	0.89	0.78	0.11	0.67	0.33	0.33	0.78	0.56	0.56
London, 2009 (N=8)	0.13	-0.50	0.50	-0.13	0.38	0.00	0.50	0.63	-0.38	-0.38	-0.13	0.13	-0.13	0.00	0.00	0.25	0.00	0.75	0.13	0.75
Pittsburgh, 2009 (N=16)	0.34	0.00	0.47	-0.07	0.63	0.40	0.75	0.64	-0.20	-0.13	0.15	0.64	0.50	0.47	0.06	-0.27	0.57	0.88	0.69	0.36
Toronto, June 2010 (N=16)	0.40	0.15	0.60	0.46	0.73	0.50	0.53	0.53	0.15	0.00	0.67	0.53	0.60	0.00	0.21	0.00	0.18	0.73	0.40	0.62
Seoul, November 2010 (N=42)	0.34	-0.05	0.61	0.30	0.57	0.28	0.54	0.63	0.38	0.21	0.37	0.32	0.49	0.10	0.08	-0.03	0.21	0.73	0.37	0.55
Cannes, November 2011 (N=24)	0.44	-0.04	0.70	0.48	0.52	0.43	0.61	0.74	0.48	0.09	0.48	0.39	0.65	0.52	0.35	0.05	0.30	0.78	0.39	0.71
Los Cabos 2012 (N=21)	0.54	0.32	0.90	0.58	0.68	0.42	0.63	0.50	0.58	0.50	0.11	0.40	0.70	0.68	0.53	0.44	0.47	0.68	0.68	0.63
St. Petersburg 2013 (N=25)	0.37	0.08	0.56	0.36	0.52	0.12	0.60	0.72	0.52	0.32	0.44	0.36	0.24	0.36	0.24	-0.04	0.20	0.60	0.60	0.52

Summit	Average	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	
Phase 1 average	0.38	0.01	0.64	0.36	0.57	0.31	0.60	0.67	0.23	0.09	0.29	0.46	0.51	0.26	0.27	0.06	0.30	0.16	0.74	0.48	0.59
Brisbane 2014 (N=28)	Phase 2: 0.42	-0.04	0.64	0.29	0.75	0.54	0.67	0.70	0.32	0.04	0.33	0.68	0.61	0.39	0.48	-0.07	0.00	0.00	0.68	0.71	0.70
Criss-free	0.42	0.42	0.54	0.42	0.54	0.50	0.67	0.58	0.54	0.04	0.46	0.42	0.29	0.33	0.29	0.04	0.25	0.25	0.54	0.63	0.74
Antalya 2015 (N=24)	0.44	0.48	0.70	0.30	0.87	0.53	0.47	0.63	0.53	0.27	0.17	0.47	0.50	0.23	0.37	0.30	0.20	0.07	0.50	0.33	0.80
Hangzhou 2016 (N=30)	0.41	0.42	0.65	0.35	0.84	0.32	0.55	0.81	0.35	0.32	0.42	0.48	0.39	0.19	0.13	0.06	0.35	-0.06	0.77	0.16	0.68
Hamburg 2017 (N=31)	0.43	0.32	0.63	0.34	0.75	0.47	0.59	0.68	0.44	0.17	0.35	0.51	0.45	0.29	0.32	0.08	0.2	0.07	0.62	0.46	0.73
Phase 2 average	0.57	0.75	0.80	0.70	0.75	0.75	0.65	0.75	0.45	0.35	0.55	0.60	0.60	0.35	0.45	0.45	0.05	0.25	0.75	0.37	1.00
Buenos Aires 2018 (N=20)	0.41	0.20	0.65	0.38	0.66	0.41	0.59	0.67	0.38	0.18	0.35	0.47	0.49	0.29	0.28	0.09	0.24	0.12	0.69	0.46	0.67
Overall (N=294)																					

Appendix C-1: Compliance Ranking by Country

Rank	Country	Compliance (score)	Compliance (percentage)	Group affiliation
1	UK	0.69	84.5%	G7 OECD
2	Germany	0.67	83.5%	G7 OECD
2	EU	0.67	83.5%	G7
3	Canada	0.66	83%	G7 OECD
4	Australia	0.65	82.5%	OECD
5	France	0.59	79.5%	G7 OECD
6	Korea	0.49	74.5%	OECD
7	Japan	0.47	73.5%	G7 OECD
8	US	0.46	73%	G7 OECD
9	China	0.41	70.5%	BRICS
10	India	0.38	69%	BRICS
10	Brazil	0.38	69%	BRICS
11	Italy	0.35	67.5%	G7 OECD
12	Mexico	0.29	64.5%	OECD
13	Russia	0.28	64%	BRICS
14	South Africa	0.24	62%	BRICS
15	Argentina	0.20	60%	
16	Indonesia	0.18	59%	
17	Turkey	0.12	56%	OECD
18	Saudi Arabia	0.09	54.5%	

Appendix D: Overall Compliance in the Pre-Xi and Xi Eras

Pre-Xi

Summit	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union
2008 Washington	0.11	0.78	0.88	0.56	0.33	0.67	1.00	0.33	0.11	0.22	0.89	0.78	0.11	0.67	0.33	0.33	0.33	0.78	0.56	0.56
2009 London	-0.50	0.50	-0.13	0.38	0.00	0.50	0.63	-0.38	-0.38	-0.13	0.13	0.13	-0.13	0.00	0.00	0.25	0.00	0.75	0.13	0.75
2009 Pittsburgh	0.00	0.47	-0.07	0.63	0.40	0.75	0.64	-0.20	-0.13	0.15	0.64	0.50	0.47	0.06	-0.27	0.57	0.13	0.88	0.69	0.36
2010 Toronto	0.15	0.60	0.46	0.73	0.50	0.53	0.53	0.15	0.00	0.67	0.53	0.60	0.00	0.21	0.00	0.08	0.18	0.73	0.40	0.62
2010 Seoul	-0.05	0.61	0.30	0.57	0.28	0.54	0.63	0.38	0.21	0.37	0.32	0.49	0.10	0.08	-0.03	0.21	0.13	0.73	0.37	0.55
2011 Cannes	-0.04	0.70	0.48	0.52	0.43	0.61	0.74	0.48	0.09	0.48	0.39	0.65	0.52	0.35	0.05	0.30	0.09	0.78	0.39	0.71
2012 Los Cabos	0.32	0.90	0.58	0.68	0.42	0.63	0.50	0.58	0.50	0.11	0.40	0.70	0.68	0.53	0.44	0.47	0.33	0.68	0.68	0.63
Average	0.00	0.65	0.36	0.58	0.34	0.60	0.67	0.19	0.06	0.27	0.47	0.55	0.25	0.27	0.07	0.32	0.17	0.76	0.46	0.60

Closest compliers: Brazil, Italy, Mexico, Russia, South Africa

Xi Era

Summit	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union
2013 St. Petersburg	0.08	0.56	0.36	0.52	0.12	0.60	0.72	0.52	0.32	0.44	0.36	0.24	0.36	0.24	-0.04	0.20	0.12	0.60	0.60	0.52
2014 Brisbane	-0.04	0.64	0.29	0.75	0.54	0.67	0.70	0.32	0.04	0.33	0.68	0.61	0.39	0.48	-0.07	0.00	0.00	0.68	0.71	0.70
2015 Antalya	0.42	0.54	0.42	0.54	0.50	0.67	0.58	0.54	0.04	0.46	0.42	0.29	0.33	0.29	0.04	0.25	0.25	0.54	0.63	0.74
2016 Hangzhou	0.48	0.70	0.30	0.87	0.53	0.47	0.63	0.53	0.27	0.17	0.47	0.50	0.23	0.37	0.30	0.20	0.07	0.50	0.33	0.80
2017 Hamburg	0.42	0.65	0.35	0.84	0.32	0.55	0.81	0.35	0.32	0.42	0.48	0.39	0.19	0.13	0.06	0.35	-0.06	0.77	0.16	0.68
2018 Buenos Aires	0.75	0.80	0.70	0.75	0.75	0.65	0.75	0.45	0.35	0.55	0.60	0.60	0.35	0.45	0.45	0.05	0.25	0.75	0.37	1.00
Average	0.35	0.65	0.40	0.71	0.46	0.60	0.70	0.45	0.22	0.40	0.50	0.44	0.31	0.33	0.12	0.18	0.11	0.64	0.47	0.74

Closest compliers: Brazil, India, Italy, Japan, Korea, USA

Correlation coefficients	Key partners			Closest average compliers				
	US	Russia	India	Brazil	Italy	Mexico	South Africa	
Pre Xi Era	0.67	0.42	0.59	0.52	0.74	0.57	0.11	
Post-Xi Era	-0.06	0.75	-0.11	0.56	0.06	0.70	0.79	

Appendix E
Appendix E-1: Compliance by Issue Area 2008–2018

N=304	Average	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	UK	USA	EU
Macro (28)	0.59	0.35	0.80	0.40	0.92	0.74	0.46	0.88	0.68	0.52	0.50	0.44	0.63	0.57	0.74	0.35	0.32	0.45	0.68	0.52	0.82
Trade (23)	0.33	-0.13	0.83	0.26	0.57	0.26	0.41	0.64	0.13	0.00	0.18	0.65	0.57	0.13	0.13	0.09	0.13	0.26	0.68	0.26	0.61
Financial regulation (24)	0.51	0.13	0.71	0.52	0.67	0.58	0.75	0.75	0.50	0.32	0.42	0.78	0.42	0.17	0.33	0.29	0.38	0.17	0.67	0.63	0.79
Development (51)	0.30	-0.18	0.51	0.25	0.61	0.22	0.50	0.67	0.33	0.04	0.20	0.43	0.30	-0.04	0.10	-0.04	0.06	0.16	0.69	0.48	0.63
Climate change (33)	0.36	0.13	0.67	0.21	0.67	0.45	0.73	0.85	0.24	0.24	0.34	0.48	0.56	0.52	-0.18	-0.41	0.09	-0.34	0.82	0.22	0.69
Energy (22)	0.36	-0.25	0.50	0.38	0.63	0.50	0.75	0.75	0.50	-0.25	0.13	0.88	0.50	0.25	0.13	0.13	0.38	0.13	0.50	0.25	0.38
Food and agriculture (9)	0.45	0.80	0.50	0.70	0.90	0.10	0.60	0.50	0.60	0.40	0.60	0.20	0.20	0.30	0.40	0.20	0.10	0.20	0.50	0.50	0.60
International cooperation (2)	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.50	1.00	0.00	0.00	0.00	0.50	0.00	0.00
Labour and employment (23)	0.50	0.52	0.83	0.39	0.74	0.30	0.52	0.70	0.61	0.09	0.48	0.57	0.48	0.30	0.43	0.22	0.48	0.35	0.70	0.52	0.78
Micro-economic policy (2)	0.78	1.00	1.00	0.00	1.00	0.50	1.00	1.00	1.00	0.50	0.50	0.50	1.00	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00
Gender (12)	0.20	-0.09	0.58	0.00	0.82	-0.09	0.55	0.67	-0.27	-0.36	0.45	0.33	0.42	-0.18	-0.18	0.18	0.00	-0.55	0.45	0.64	0.60
Health (11)	0.37	-0.18	0.55	0.27	0.82	0.45	0.55	0.82	0.27	-0.09	0.00	0.45	0.36	-0.18	0.27	0.18	0.36	0.18	0.82	0.73	0.73

N=304	Average	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	UK	USA	EU
Infrastructure (2)	0.80	1.00	1.00	1.00	1.00	0.50	0.50	0.50	0.50	1.00	1.00	0.50	1.00	1.00	1.00	1.00	0.50	0.50	0.50	1.00	1.00
Migration/refugees (3)	0.47	1.00	0.33	1.00	1.00	0.00	0.67	1.00	-0.33	0.33	0.67	0.33	0.00	0.33	0.33	0.33	-0.33	1.00	0.33	0.33	1.00
Terrorism (4)	0.74	1.00	0.75	0.25	0.75	1.00	1.00	1.00	0.75	0.50	1.00	0.00	1.00	0.75	1.00	0.75	-0.25	0.75	0.75	1.00	1.00
Information and communication (3)	0.67	0.67	0.67	0.67	1.00	0.67	0.67	0.67	0.67	0.67	0.33	0.33	1.00	0.67	0.67	1.00	0.33	0.67	0.67	0.33	1.00
International taxation (24)	0.54	0.63	0.79	0.42	0.58	0.54	0.67	0.75	0.50	0.29	0.50	0.71	0.54	0.50	0.46	0.25	0.58	0.08	0.75	0.50	0.78
Digital economy (7)	0.24	0.67	0.86	0.29	0.86	0.43	0.43	0.29	0.00	-0.29	0.00	0.00	0.43	-0.14	0.29	0.14	-0.14	-0.29	0.43	-0.14	0.71
Environment (3)	0.20	0.33	1.00	-0.33	0.33	0.00	0.67	0.67	0.33	-0.33	0.33	0.67	0.00	-0.33	0.00	-0.67	0.33	-0.67	1.00	0.33	0.33
Overall average	0.41	0.20	0.64	0.36	0.66	0.40	0.58	0.67	0.37	0.17	0.34	0.46	0.48	0.27	0.26	0.09	0.23	0.11	0.68	0.45	0.67

China's top performing issue areas: terrorism (+1.00), macroeconomics (0.74), ICT (0.67), financial regulation (0.58), taxation (0.54)

US's top performing issue areas: microeconomic/infrastructure/terrorism (+1.00), health (0.73), gender (0.64), financial regulation (0.63), labour/macroeconomics (0.52)

India's top performing issue areas: microeconomic (+1.00), terrorism (+0.75), macroeconomics (0.68), ICT (0.67), labour (0.61)

Russia's top performing issue areas: terrorism/infrastructure/international coop (+1.00), macroeconomics (0.74), ICT (0.67), microeconomic policy (0.50), taxation (0.46)

Compliance Correlations on China's Top-Performing Issue Areas

	China's compliance companions (countries with closest average compliance)												
	Key partners						Others						
Terrorism Correlation coefficient	100%	US	Russia	Argentina	France	Germany	Italy	Korea	EU				
		1	1	1	1	1	1	1	1				
Macroeconomics Correlation coefficient	87%	India	Russia	Australia	UK	EU							
		-0.30	0.19	-0.22	-0.15	0.16							
ICT Correlation coefficient	84%	Brazil	India	Russia	Argentina	Australia	France	Germany	Indonesia	Mexico	Turkey	UK	
		1	1	1	1	1	1	1	1	1	1	-0.5	
Financial regulation Correlation coefficient	79%	US	Brazil	India	Canada	UK							
		0.26	0.67	0.56	0.66	-0.04							
International taxation Correlation coefficient	77%	US	India	Russia	South Africa	Argentina	Canada	Italy	Korea	Mexico			
		0.06	0.26	0.34	0.35	0.63	0.35	0.62	0.43	0.36			

Appendix E-2: Compliance on Subjects Closest to G20's Distinctive Missions

Subject	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union
Macroeconomics	0.35	0.80	0.40	0.92	0.74	0.46	0.88	0.68	0.52	0.50	0.44	0.63	0.57	0.74	0.35	0.32	0.45	0.68	0.52	0.82
Development	-0.18	0.51	0.25	0.61	0.22	0.50	0.67	0.33	0.04	0.20	0.43	0.30	-0.04	0.10	-0.04	0.06	0.16	0.69	0.48	0.63
Climate change	0.13	0.67	0.21	0.67	0.45	0.73	0.85	0.24	0.24	0.34	0.48	0.56	0.52	-0.18	-0.41	0.09	-0.34	0.82	0.22	0.69
Health	-0.18	0.55	0.27	0.82	0.45	0.55	0.82	0.27	-0.09	0.00	0.45	0.36	-0.18	0.27	0.18	0.36	0.18	0.82	0.73	0.73

China's closest compliance companions (± 0.10)

Macroeconomics: Australia, India, Russia, UK, EU

Development: Brazil, Italy, Korea, Turkey

Climate Change: Japan, Mexico

Health: Australia, France, Japan, Korea, South Africa

Compliance Correlations Table

	Key partners			Other compliance companions (countries with closest average compliance)					
Macroeconomics	US	Brazil		Australia	India	Russia	UK	EU	
Correlation coefficient	-0.10	-0.27		-0.22	-0.30	0.19	-0.15	0.16	
Development	US	Russia		Brazil	Italy	Korea	Turkey		
Correlation coefficient	0.68	0.54		0.66	0.41	0.61	0.66		
Climate Change	US	Brazil	Russia	India	Japan	Mexico			
Correlation coefficient	0.76	-0.40	0.79	0.35	0.73	0.46			
Health	US	Brazil	Russia	India	Australia	France	Japan	Korea	South Africa
Correlation coefficient	0.89	0.96	0.65	0.65	0.38	0.99	0.97	0.92	0.82

Appendix E-3: Compliance Correlations by Issue Area Over time (Pre-Xi vs. Xi era)

	Compliance companions (countries with compliance within ± 0.1 range of China's compliance)							
Macroeconomics								
China's compliance		France	Indonesia	India	Korea	Mexico	Saudi Arabia	South Africa
Pre-Xi Era (2008–2012)	82%	0.40	0.07	0.43	0.31	0.61	0.1	-0.2
Xi Era (2013–2018)	92%	Canada	Germany	India	EU			
Development								
China's compliance		Brazil	India	Italy	Turkey			
Pre-Xi Era (2008–2012)	62%	0.55	0.36	0.27	0.60			
Xi Era (2013–2018)	60%	0.17	-0.29	-0.05	0.29			
Climate change								
China's compliance		Canada	France	Korea				
Pre-Xi Era (2008–2012)	77%	0.68	0.34	0.41				
Xi Era (2013–2018)	70%	Indonesia						
		0.42						

*Health compliance data only available from 2014

Appendix F: G20 Members Compliance and Relative Capability

Member (2020 compliance)	Compliance average		GDP in 2019 (USD millions)	Purchasing power parity PPP (millions)	Compliance X GDP
Germany	+0.90	95%	3,845,630.03	4,514,794.31	4,289,054
Australia	+0.82	91%	1,392,680.59	1,275,026.60	1,267,338
Canada			1,736,425.63	1,852,669.16	1,580,146
Japan			5,081,769.54	5,247,580.84	4,624,409
European Union	+0.73	86%	15,592,795.17	19,814,119.62	13,409,803
France	+0.70	85%	2,715,518.27	3,110,915.15	2,308,190
Italy	+0.60	80%	2,001,244.39	2,585,936.45	2,068,748
Korea	+0.55	77%	1,642,383.22	2,046,766.34	1,264,634
China	+0.45	73%	14,342,902.84	21,414,903.68	10,470,318
United Kingdom			2,827,113.18	3,114,857.83	2,367,291
Saudi Arabia			792,966.84	1,643,080.03	578,865
Brazil	+0.27	64%	1,839,758.04	3,131,944.31	1,177,445
South Africa			351,431.65	747,577.38	224,915
Argentina	+0.18	59%	449,663.34	1,036,721.13	287,784
United States			21,427,700.00	20,544,343.46	12,642,343
Indonesia			1,118,190.78	3,117,334.24	659,732
Turkey			754,411.71	2,316,406.55	445,102
India	+0.09	55%	2,875,142.31	9,058,691.69	1,696,341
Russia			1,699,876.58	4,192,936.67	934,931
Mexico	0.00	50%	1,238,286.72	2,573,847.60	619,143
Average/Total	+0.44	72%			

Compiled by Mary Zelenova, Alissa Wang and John Kirton, August 7, 2020. Bold indicates highest scores

Sources:

World Bank, GDP (current US\$). https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=DE-AU-CA-JP-FR-IT-KR-CN-GB-SA-BR-ZA-AR-US-ID-TR-IN-RU-MX-EU&most_recent_value_desc=false

World Bank, GDP, PPP. https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD?locations=DE-AU-CA-JP-FR-IT-KR-CN-GB-SA-BR-ZA-AR-US-ID-TR-IN-RU-MX-EU&most_recent_value_desc=false

Appendix G: China's Summit Compliance 2019–2020

Appendix G-1: G20 Osaka Summit Interim Compliance Scores

	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	Average		
1	Macroeconomics: +1	0	-1	+1	+1	+1	0	+1	+1	+1	+1	0	+1	+1	+1	0	+1	0	+1	+1	+0.65	83%	
2	Inclusive Growth: +1	+1	+1	+1	-1	n/a	n/a	+1	+1	n/a	+1	+1	+1	+1	0	+1	+1	+1	+1	+1	+1	+0.88	94%
3	Macroeconomics: +1	+1	+1	+1	0	n/a	n/a	0	0	n/a	-1	-1	0	0	0	0	0	0	-1	+1	+1	+0.75	88%
4	Exchange Rates: 0	+1	+1	+1	+1	0	+1	+1	+1	0	+1	+1	+1	+1	-1	+1	+1	+1	0	+1	+1	+0.75	88%
5	Trade: Open Markets: 0	+1	+1	+1	+1	-1	+1	+1	-1	0	0	0	+1	0	+1	+1	0	0	+1	+1	+1	+0.50	75%
6	Trade: Reform of the World Trade Organization: +1	+1	+1	+1	+1	-1	+1	+1	-1	0	0	0	+1	0	+1	+1	0	0	+1	+1	+1	+0.30	65%
	Infrastructure: +1	+1	+1	+1	0	+1	+1	+1	+1	-1	+1	+1	+1	-1	0	-1	-1	+1	0	+1	+1	+0.30	65%
	Quality Infrastructure Investment: 0	0	0	+1	0	+1	+1	+1	+1	-1	+1	+1	+1	-1	0	-1	-1	+1	0	+1	+1	+0.30	65%
	Digital Economy: 0	0	0	+1	0	+1	+1	+1	+1	-1	+1	+1	+1	-1	0	-1	-1	+1	0	+1	+1	+0.30	65%
	Frame-works: 0	0	0	+1	0	+1	+1	+1	+1	-1	+1	+1	+1	-1	0	-1	-1	+1	0	+1	+1	+0.30	65%

	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	Average	
7	0	-1	0	-1	-1	0	0	+1	0	+1	+1	-1	0	0	-1	-1	0	+1	-1	+1	-0.10	45%
	Taxation: Digitalization																					
8	0	0	+1	-1	0	0	+1	0	+1	-1	+1	0	+1	+1	0	0	+1	+1	-1	+1	+0.30	65%
	Crime and Corruption: Cyber Resilience																					
9	0	0	-1	+1	0	0	0	0	-1	0	0	+1	-1	0	0	0	-1	0	0	0	-0.10	45%
	Terrorism: Internet Security																					
10	0	+1	+1	+1	0	0	+1	0	+1	+1	+1	0	+1	+1	+1	+1	+1	+1	+1	+1	+0.75	88%
	Labour and Employment: Opportunities for Youth																					
11	0	+1	-1	0	-1	0	+1	+1	-1	0	0	+1	0	0	+1	0	0	0	0	+1	+0.15	58%
	Gender: Education and Training																					
12	0	+1	0	+1	0	+1	0	+1	0	0	0	-1	0	0	+1	0	+1	+1	+1	0	+0.30	65%
	Gender: Labour Market																					
13	0	+1	+1	+1	+1	-1	+1	0	0	-1	+1	0	+1	+1	0	0	+1	+1	+1	+1	+0.50	75%
	Development: Energy																					
14	0	+1	0	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	0	+1	0	+1	+1	+1	+1	+0.80	90%
	Development: Investment in Human Capital																					
15	0	+1	-1	+1	+1	0	0	0	-1	-1	+1	+1	0	0	-1	-1	-1	0	0	+1	-0.05	48%
	Health: Aging Populations																					

	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	Average	
16 Health: Public Health Preparedness	+1	+1	+1	+1	0	+1	+1	+1	0	+1	+1	+1	0	+1	+1	0	+1	+1	+1	+1	+0.80	90%
17 Environment: Marine Plastic Litter and Microplastics	+1	+1	-1	-1	-1	0	0	-1	-1	-1	0	+1	0	-1	-1	0	0	-1	-1	+1	-0.40	30%
18 Climate Change: Financing for Sustainable Development	0	+1	0	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	+1	+1	+1	0	+1	+1	+1	+0.80	90%
19 Climate Change: Innovation	+1	+1	+1	+1	0	+1	+1	+1	0	+1	0	+1	0	0	0	0	+1	+1	0	+1	+0.60	80%
Average	+0.16	+0.63	+0.16	+0.58	+0.16	+0.29	+0.58	+0.58	+0.16	+0.11	+0.58	+0.32	+0.47	+0.32	+0.21	+0.16	+0.31	+0.63	+0.21	+0.84	+0.37	69%
	58%	82%	58%	79%	58%	65%	79%	79%	58%	55%	79%	66%	74%	66%	61%	58%	66%	82%	61%	92%	69%	

Ranking: (1st): EU; (2nd): UK/Australia; (3rd): Canada/India/Germany/Japan (4th); Mexico (5th); Korea/Turkey/Russia (6th); France (7th); US/Saudi Arabia (8th); China/Argentina/South Africa/Brazil/Indonesia (9th); Italy *n/a* not applicable

Appendix G-2: 2020 G20 Extraordinary Virtual Summit Interim Compliance Scores

	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	Average	
1	Health: World Health Organization strengthening	0	+1	-1	+1	+1	+1	+1	0	0	0	+1	-1	0	+1	0	+1	0	-1	+1	+0.35	68%
2	Health: System strengthening	0	+1	0	+1	+1	+1	0	0	+1	+1	+1	-1	0	+1	0	0	+1	+1	+1	+0.55	78%
3	Health: Digital technologies	0	0	0	-1	-1	0	+1	0	0	0	0	-1	0	-1	-1	-1	0	0	0	-0.30	35%
4	Health: Research and development	0	+1	0	+1	0	+1	+1	-1	0	0	+1	0	+1	0	0	+1	+1	-1	+1	+0.40	70%
5	Global economy: Policy tools	0	+1	+1	0	+1	+1	0	0	+1	+1	+1	-1	0	0	+1	0	+1	+1	+1	+0.55	78%
6	Global economy: Fiscal support	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	+1	+1	+1	+1	+1	+1	+0.95	98%

	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	Average	
7 Global Economy: Debt vulnerability	0	+1	0	+1	+1	+1	+1	0	0	0	+1	0	0	0	+1	0	0	+1	+1	+1	+0.50	75%
8 Labour and Employment: Job and income protection	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1.00	100%
9 Trade: Flow of goods and services	+1	0	+1	+1	+1	0	+1	0	0	+1	+1	+1	+1	0	+1	0	+1	0	0	0	+0.50	75%
10 Trade: Avoiding unnecessary interference	0	0	0	+1	0	-	-	-1	0	-	+1	+1	+1	0	-1	0	-1	-1	0	0	0.00	50%
11 Finance: Global cooperation	0	+1	+1	+1	0	+1	+1	-1	0	+1	+1	-1	0	-1	0	+1	-1	0	-1	+1	+0.20	60%
Average	+0.18	+0.82	+0.27	+0.82	+0.45	+0.70	+0.90	+0.09	+0.18	+0.60	+0.82	+0.55	0.00	+0.09	+0.45	+0.27	+0.18	+0.45	+0.18	+0.73	+0.44	72%
	59%	91%	64%	91%	73%	85%	95%	55%	59%	80%	91%	77%	50%	55%	73%	64%	59%	73%	59%	86%	72%	

Acknowledgements The authors gratefully acknowledge the assistance of Brittany Warren, Mary Zelenova, Alessandra Cicci, Sofia Lopez, Mary Noh, and the compliance analysts of the G20 Research Group based at the University of Toronto and the Centre for International Institutions Research based at the Russian Academy for National Economy and Public Administration in Moscow.

Author Contributions The two co-authors contributed equally, with JK leading on the conceptualization and AXW on the quantitative analyses.

Funding The authors received no financial support for the research, authorship or publication of this article.

Data Availability The lead author affirms that this manuscript is an honest, accurate and transparent account of the research being reported.

Declarations

Conflict of interest The authors declare that there is no conflict of interest.

References

- Allison, Graham. 2017. *Destined for War: Can America and China escape the Thucydides Trap?* Boston: Houghton Mifflin Harcourt.
- Bennhold, Katrin. 2020. 'Sadness' and Disbelief from a world missing American Leadership. *New York Times* (23 April 2020). <https://www.nytimes.com/2020/04/23/world/europe/coronavirus-american-exceptionalism.html>.
- Burrows, Mathew J. and Peter Engelke. 2020. US global leadership at risk. *Atlantic Council* (7 July 2020). <https://www.atlanticcouncil.org/content-series/shaping-post-covid-world-together/us-global-leadership-at-risk/>.
- Cooley, Alexander, and Daniel Nexon. 2020. *Exit from Hegemony: The Unravelling of the American Global Order*. New York: Oxford University Press.
- Fishman, Edward and Siddharth Mohandas. 2020. A Council of Democracies Can Save Multilateralism. *foreignaffairs.com* August 5.
- G20 Research Group. 2020. *Compliance Coding Manual* (Global Governance Program, University of Toronto). www.g20.utoronto.ca.
- Greitens, Sheena Chestnut, Myunghee Lee, and Emir Yazici. 2020. Counterterrorism and preventive repression: China's changing strategy in Xinjiang. *International Security* 44 (3): 9–47.
- Ikenberry, G. John. 2020. The next liberal order: The age of contagion demands more internationalism, not less. *Foreign Affairs* 99 (4): 133–142.
- Kirton, John. 2013. *G20 Governance for a Globalized World*. Farnham: Ashgate.
- Kirton, John. 2016. *China's G20 Leadership*. Farnham: Ashgate.
- Kirton, John, and Marina Larionova. 2018. *Accountability for effectiveness in global governance*. London: Routledge.
- Kirton, John and Brittany Warren. 2020a. Selected Steps against a Comprehensive Threat: The G20 Leaders' Statement on COVID-19. G20 Research Group, March 26. <http://www.g20.utoronto.ca/analysis/200326-kirton-warren.html>.
- Kirton, John and Brittany Warren. 2020b. A Fragile First Step? G7 and G20 Governance of Climate Change, the Environment, Health and Indigenous Peoples. Paper prepared for the annual convention of the International Studies Association, Honolulu, March 25–29, 2020. www.g20.utoronto.ca.
- Kroenig, Matthew. 2020. *The Return of Great Power Rivalry*. Oxford University Press: New York.
- Li, Mingjian. 2011. Rising from within: China's search for a multilateral world and its implications for Sino–US Relations. *Global Governance* 17 (3): 331–351.
- Mearsheimer, John J. 2011. *The tragedy of great power politics*. New York: W. W. Norton.
- Nye, Joseph. 2020. Power and interdependence with China. *The Washington Quarterly* 43 (1): 7–21.

- Panda, Jagannath Prasad. 2006. China's position on international terrorism: A survey of government releases and papers. *China Report* 42 (2): 199–207.
- Patrick, Stewart. 2020. When the system fails: COVID-19 and the costs of global dysfunction. *Foreign Affairs* 99 (4): 40–51.
- Pei, Minxin. 2020. China's coming upheaval: Competition, the coronavirus and the weakness of Xi Jinping. *Foreign Affairs* 99 (3): 82–95.
- Rapson, Jessica, and John Kirton. 2020. Raising compliance with G20 commitments: Two evidence-based instruments. *Global Solutions Journal* 5: 224–233.
- Sachs, Jeffrey D. 2020. *A new foreign policy: Beyond American exceptionalism*. New York: Columbia University Press.
- Sachs, Jeffrey D. 2020b. G20, Heal Thyself. Project Syndicate, July 15. <https://www.project-syndicate.org/commentary/g20-finance-ministers-should-focus-on-panemic-by-jeffrey-d-sachs-2020-07>.
- Sachs, Jeffrey D. 2020c. America's Unholy Crusade Against China. *Project Syndicate* August 5. <https://www.project-syndicate.org/commentary/america-evangelicalcrusade-against-china-by-jeffrey-d-sachs-2020-08>.
- Tschantret, Joshua. 2018. Repression, opportunity, and innovation: The evolution of terrorism in Xinjiang, China. *Terrorism and Political Violence* 30 (4): 569–588.
- Wang, Jin, and Dehang Kong. 2019. Counter-terrorism cooperation between China and Central Asian states in the Shanghai Cooperation Organization. *China Quarterly of International Strategic Studies* 5 (1): 65–79.
- Xi, Jinping. 2017. Jointly Shoulder Responsibility of Our Times, Promote Global Growth. *Speech at World Economic Forum Annual Meeting*, 17 January 2017. <https://america.cgtn.com/2017/01/17/full-text-of-xi-jinping-keynote-at-the-world-economic-forum>.
- Xi, Jinping. 2018. Openness for Greater Prosperity, Innovation for a Better Future. *Speech at the opening of the 2018 Boao Forum for Asia*, 10 April 2018. <https://uscnpm.org/2018/04/11/transcript-president-xi-addresses-2018-boao-forum-asia-hainan/>.



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