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Content

Содержание

Challenges in Energy Global Governing

The G20 and the Future of Energy Governance

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The fraught history of energy governance means that despite the oil shocks of the 1970s and ongoing resource price volatility, today there are no effective global mechanisms for cooperation between energy-producing and energy-consuming countries. Furthermore, there are two conflicting challenges at the heart of energy governance – ensuring energy access for all and transitioning to a low-carbon future. This article argues that the current global energy institutions are ill equipped to provide the impetus for energy governance cooperation, and the solution will have to come from collective political will at the leader level. The Group of 20 (G20) could be part of the solution as the economic forum for the world's largest advanced and emerging economies, including both energy producers and consumers. This article gives a brief history of energy governance and the institutions that emerged in the second half of the 20th century. It explores the strengths and weaknesses of each institution, including the well-established International Energy Agency (IEA) and Organization of Petroleum Exporting Countries, as well as more recent players such as the International Energy Forum and the International Renewable Energy Agency. It goes on to explain how the lack of progress in reaching global solutions led to G20 interest in energy governance, and what that forum has achieved on energy cooperation so far, notably the G20 Principles on Energy Collaboration in 2014 and the meeting of G20 energy ministers in 2015. The article focuses mainly on how the G20 can progress the energy governance agenda, and what pragmatic options are available for the forum. In particular, it discusses how the G20 might spearhead reform of the IEA, support new initiatives and pursue a new platform for discussion within the G20.

Key words: energy governance, energy access, climate change, G20, International Energy Agency, OPEC, International Energy Forum, International Renewable Energy Agency, multilateralism

Introduction

In 2016, there are no effective global mechanisms for high-level cooperation between energy-producing and energy-consuming countries. Current global energy institutions are ill equipped to provide the impetus for energy governance cooperation, and the solution will need to come from collective political will at the leader level.

There have been huge shifts over the last decade in the energy sector through technology revolutions in shale oil and growing efforts to address climate change. Renewable energy, especially solar power, is becoming more cost efficient. Not only is the energy mix changing, but the dynamics between producers and consumers are also changing. The United States, previously

the world's largest energy importer, has transitioned into relative self-sufficiency through shale oil and gas. The largest consumers of energy are now the emerging economies, including China and India, which have been investing in renewable energy while still relying heavily on fossil fuels.

Existing energy institutions have struggled to keep across these developments. This article gives a brief history of energy governance and the institutions that emerged in the second half of the 20th century. The strengths and weaknesses of each of the institutions, including the well-established International Energy Agency (IEA) and the Organization of the Petroleum Exporting Countries (OPEC), as well as more recent players such as the International Energy Forum (IEF) and the International Renewable Energy Agency (IRENA), are explored in a comparative framework.

Today there are two essential challenges at the heart of energy governance – ensuring energy access for all and transitioning to a low-carbon future.[1] Energy access relies on "steady supply, robust governance, and an efficient and stable distribution system" [Wu and Wu, 2014]. Energy and climate change are inseparable and energy access will need to be pursued without further warming the planet beyond already dangerous levels. The world is still a long way from meeting these challenges, with significant lags in investment.

The lack of progress in reaching global solutions to the two energy challenges has coincided with G20 interest in the energy governance agenda. The G20 could be part of a solution as the economic governance forum for the world's largest advanced and emerging economies, including both energy producers and consumers. The G20 aims to create strong, sustainable and balanced growth for the global economy. Energy access is critical for this goal. Also critical is getting the optimal balance for the global energy mix, which depends on the right technology, capital and legal frameworks.

Although the forum has achieved limited outcomes on energy cooperation so far, there have been some successes with G20 members agreeing to the G20 Principles on Energy Collaboration in 2014 and the first meeting of G20 energy ministers in 2015. Energy is unlikely to lose relevance for the G20 with oil-producing countries increasingly unable to balance their budgets and investment needed to improve energy efficiency and mobilize renewables [Arezki, Mazarei and Prasad, 2015].

This article focuses mainly on how the G20 can progress the energy governance agenda, and what pragmatic options are available for the forum. It looks narrowly at the role of multilateral government groupings (while acknowledging the importance of private actors, especially multilateral energy companies). Specifically, it examines which groupings are best placed to find solutions to the two key challenges for global energy.

The central research question is whether the G20 can help to solve the fragmented system of energy governance. The G20 is voluntary and has flexibility compared with treaty-based organizations. In particular, this article discusses how the G20 might spearhead reform of the IEA, support new initiatives and pursue a new platform for discussion within the G20.

The Current Landscape

Energy Markets

Energy markets are prone to significant bouts of volatility. The more than 50% drop in oil prices in the second half of 2014 is one of six episodes of significant oil price decline over the

[1] Energy access depends on modern energy supply for people around the world from different energy sources and on the security of international energy markets.

past three decades [Baffes, Kose, Ohnsorge et al., 2015]. This uncertainty is compounded by political and economic unrest in many of the large oil-producing countries. OPEC acknowledges that social unrest in many parts of the world affects supply and demand.[2] Since the 1970s, there has been discussion about the need to stabilize or control oil prices. An open global economy with rules set by governance bodies is more desirable.

Meanwhile, IRENA has announced that "renewable energy projects across the globe are now matching or outperforming fossil fuels, particularly when accounting for externalities like local pollution, environmental damage and ill health" [Adnan Amin, quoted in Parkinson, 2015]. This is based on the 2014 report on Renewable Power Generation Costs in 2014, which concludes that "biomass, hydropower, geothermal and onshore wind are all competitive with or cheaper than coal, oil and gas-fired power stations, even without financial support and despite falling oil prices" [Parkinson, 2015; IRENA, 2015].

Climate change action will likely require countries to reduce greenhouse gas emissions from burning fossil fuels and shift toward renewable and alternative sources of energy. However, despite new developments, oil, coal and natural gas continue to make up 80.5% global energy consumption in 2016 [Economic Intelligence Unit, 2016]. The transition away from carbon-based energy remains an enormous undertaking. Divestment campaigns call for an immediate stop to fossil fuel-based energy (through removing investment capital from oil, coal and gas companies), but some fossil fuels will likely be needed for energy access in the short term around the world. New technology for clean coal may provide some respite, and new opportunities for climate financing and better deployment of renewables will also help increase energy access while moving away from carbon-intensive sources of energy.

There is also debate on how to price carbon to address the negative externalities associated with its consumption. This has been led by cap and trade programmes designed (but not implemented nationally) in the United States to control pollution and "reward innovation, efficiency, and early action and provide strict environmental accountability without inhibiting economic growth" [United States Environmental Protection, 2016]. The European Union has an emissions trading system. China announced in 2015 that it would implement a national cap and trade system to reduce greenhouse gas emissions [Mufson, 2015].

Energy Institutions

The oil crises of the 1970s led countries to cooperate on energy policy to attempt to match supply and demand, and to cushion shocks to the global economy that result from energy disruptions. As oil producers banded together to form OPEC, the IEA was formed as the collective response of energy-consuming countries that were starved of oil. The IEA remains the most influential multilateral energy organization and provides a significant body of technical energy expertise. For the next two decades, these two organizations remained the main vehicles for multilateral energy governance.

In the 1990s, a number of new organizations came into being as multilateralism flourished after the thawing of the Cold War. In 1991, energy ministers from OPEC and IEA countries met in Riyadh, Saudi Arabia, for the first IEF gathering. This became the most inclusive grouping yet, as major producers and consumers met to discuss supply and demand and the energy markets. The IEF claims to be the neutral facilitator of open dialogue on energy with key global oil and gas actors. Also in 1991, with the break-up of the Soviet Union, the Energy Charter Treaty came into effect. This is a legally binding treaty with the aim of ensuring energy access for European countries.

[2] See "Brief History" on the OPEC website at http://www.opec.org/opec_web/en/about_us/24.htm.

Around the same time, the challenge of responding to climate change and preventing global warming was elevated to the international arena in 1992 when the United Nations Framework Convention on Climate Change (UNFCCC) was negotiated in Rio de Janeiro, Brazil. While the urgency of climate change is driven by fundamental physical phenomena, political impetus is critical for the degree and timing of government responses. As climate change becomes more of a priority for governments, some momentum is building for a transition away from carbon-based fossil fuels responsible for global warming.

In 2009, IRENA was founded. The renewable energy agency is located in Abu Dhabi in the United Arab Emirates. The headquarters have been built to produce zero net carbon emissions and zero net waste [Block, 2009]. The UAE announced that IRENA will "enable Abu Dhabi, already one of the largest oil exporters in the world, to lead the way in renewable energy innovations as the country will become a global research and development hub" [Abu Dhabi Emirate, 2009]. This decision symbolizes the reality of moving away from carbon-based energy.

In 2015, energy governance is now fragmented across these six different forums (OPEC, IEA, IEF, Energy Charter Treaty, UNFCCC and IRENA), each with its own membership criteria, institutional history and specific mandate. Each has varying strengths and weaknesses, and plays an important role in performing some of the functions of energy governance, but no one organization brings together the world's largest producers and consumers in order to provide a coherent framework for energy governance across all types of energy. The IEF remains a meeting forum for energy ministers, and lacks the resources and mechanisms to be a leader-level forum with influence.

A success in modern energy governance has been the Joint Oil Data Initiative (JODI) facilitating collaboration among the IEA, OPEC and IEF to improve the transparency of oil data. However, quality data still remains a challenge for the energy markets. For example, China and India are both under pressure from the international community to be more transparent about their energy data.

Table 1 outlines the membership of G20 countries across the six forums outlined above and shows the uneven distribution of members within the current energy institutions. The functions of the specific organizations are outlined in more detail below.

Table 1: G20 Country Membership in Energy Organizations

	G20	OPEC	International Energy Agency	International Energy Forum	Energy Charter Treaty	UNFCCC	IRENA
Countries (excluding European Union)	Argentina			•		•	•
	Australia		•	•	• [a]	•	•
	Brazil					•	
	Canada		•	•		•	
	China			•		•	•
	France		•	•	•	•	•
	Germany		•	•	•	•	•
	India			•		•	•
	Indonesia					•	•
	Italy		•	•	•	•	•
	Japan		•	•	•	•	•
	Korea		•	•		•	•

	G20	OPEC	International Energy Agency	International Energy Forum	Energy Charter Treaty	UNFCCC	IRENA
Countries (excluding European Union)	Mexico			•		•	•
	Russia			•	• [a]	•	•
	Saudi Arabia	•		•		•	•
	South Africa			•		•	•
	Turkey		•	•	•	•	•
	United Kingdom		•	•	•	•	•
	United States		•	•		•	•

Notes: OPEC = Organization of the Petroleum Exporting Countries; UNFCCC = United Nations Framework Convention on Climate Change; IRENA = International Renewable Energy Agency.

[a] Russia and Australia have signed but not ratified the Energy Charter Treaty.

International Energy Agency

The IEA is made up of 29 net oil importers. It was established in 1974 to maintain and improve systems for coping with oil-supply disruptions and operating a permanent information system on the international oil market. It currently has the most developed mandate for global energy governance to encourage energy security, economic development, environmental awareness and engagement worldwide.[3] The IEA is a treaty-based organization, which means that it contains a legal instrument; however, more general decision-making is based on consensus.

To achieve its first objective of managing disruptions in the oil supply, members are required to hold 90 days of oil stocks. However, existing members do not always comply. IEA members have fallen behind on their stocking obligations for limited periods and Australia is deliberately in breach of its obligations with no plan to comply [Downie, 2015a]. To achieve the second objective of operating an information system, the IEA engages in systematic data collection and analysis. Its annual publication of the World Energy Outlook remains the world's leading source of global energy statistics and analysis.

Currently, membership is only open to countries within the Organisation for Economic Co-operation and Development (OECD). Membership therefore involves many European countries and some new influential players such as Mexico. To put this constraint into perspective, about 90% of the growth in energy demand will come from non-OECD countries over the next quarter century [Wu and Wu, 2014].

The IEA has made efforts to show that it is working closely with non-OECD members including China, India, Russia, Brazil, Indonesia and South Africa. There are political tensions within the organization about future steps and the formal inclusion of non-members. In the event of membership expansion, the European countries will lose share and influence. New members will have to share data and promise to cooperate in crisis times. Holding oil stocks is a budgetary commitment that is not always easy to sell domestically.

So far, there are no indications of treaty reform or decoupling IEA membership from OECD membership. Instead, a gradual process is being taken and the large emerging markets have already been working closely with the IEA. There were positive developments at the IEA ministerial meeting in 2015, with association agreements established with China, Indonesia and Thailand to foster "deeper co-operation and collaboration" [IEA, 2015].

[3] See "About Us" on the IEA website at http://www.iea.org/aboutus.

As a small grouping, the IEA needs to open its membership if it wants to be at the centre of global energy governance arrangements.

Organization of the Petroleum Exporting Countries

OPEC is the oldest of the modern energy organizations, established in Baghdad, Iraq, in 1960. It was established to coordinate and unify petroleum policies among member countries, in order to influence prices and prevent shocks to the revenue of member countries. Its membership consists of 13 oil exporters, mainly in the Middle East.

The establishment of the organization represented a significant step toward states asserting influence over the energy markets through collaboration. However, attempts to stabilize energy prices in recent years have become increasingly problematic. Oil production has increased outside OPEC countries and new products increasingly compete with oil. The organization has lost influence.

OPEC operates as a closed club and membership is unlikely to expand. Indeed, Gabon and Indonesia have both left OPEC, in 1995 and 2008 respectively, although Indonesia's membership was reactivated on January 1, 2016. Both produced less oil than their OPEC counterparts, and fixed high member fees did not guarantee influence within the organization. OPEC members meet with IEA members in the IEF. The future of OPEC will depend on its collaboration with other forums and its internal coherence.

International Energy Forum

The IEF, based in Riyadh, brings together energy ministers from 89 major producing and consuming countries. Of these countries, 74 are signatories to the IEF Charter. The IEF is unique in that "it comprises not only consuming and producing countries of the IEA and OPEC, but also Transit States and major players outside of their memberships, including Argentina, China, India, Mexico, Oman, Russia and South Africa."[4]

Although the IEF has the broad representation that both the IEA and OPEC lack, it does not have any function beyond information sharing and is hindered by limited resources. So far, the IEF has not been able to develop a mandate beyond promoting dialogue. Dialogue plays an important role in information sharing and boosting cooperation, but the IEF is unable to provide solutions in a crisis. Its location in Riyadh is also politically sensitive for energy discussions. For example, in 2015, Saudi Arabia was perceived to be influencing the decisions of OPEC countries to pump more oil despite low prices [Crooks, 2015].

The IEF is aware of its unique position in energy governance. It followed and reported on the G20 energy-related meetings in 2015. It has played a role in bringing together OPEC and the IEA, and led G20 work on JODI, finance trading in energy markets and comparative work on energy outlooks However, it would require a revised mandate, a boost in funding and, probably, relocated headquarters to elevate its standing.

Energy Charter Treaty

The 1991 Energy Charter Treaty provides legal protection for energy trade and is legally binding. The signatories are mainly European and former Soviet Union countries, and the organization is a product of post-Cold War cooperation in Europe. China, the United States and

[4] See "Partners" on the IEF website at https://www.ief.org/about-ief/organisation/partners.aspx.

Saudi Arabia are observers only. It is distinct in that member states that have signed the charter have agreed to investment-state dispute settlement to promote the stability of the energy sector and encourage investment. This is a much stronger legal mechanism than the consensus decision-making of the other energy groups outlined in this article.

International Renewable Energy Agency

IRENA is open to all United Nations countries and has a specific function to promote renewable energy and "supports countries in their transition to a sustainable energy future."[5] In March 2016, it had 145 members. The organization promotes all forms of renewable energy including bioenergy, geothermal, hydropower, ocean, solar and wind energy. Like the IEA, IRENA's greatest strength is gathering and disseminating information. Unlike the IEA and OPEC, the organization has a very broad membership. However, its mandate remains restricted to renewable energy.

United Nations Agencies

The UNFCCC is truly global with 196 parties. Its purpose is to facilitate negotiations among countries on commitments to reduce their greenhouse gas emissions. However, the treaty is non-binding and depends on individual country actions. Only the Kyoto Protocol legally binds developed countries to emission reduction targets.[6] However, it has weakened over time. China, India and the United States have not ratified the Kyoto Protocol.

The UNFCCC furthers the aim of transitioning to a low-carbon environment, but does not explicitly address energy access. It has struggled to achieve its primary mandate, with a string of high-profile failures, most prominently at the Copenhagen Conference of the Parties (COP) in 2009. The challenging structure of negotiations, toxic environment of "Planet UNFCCC," and a winners and losers dichotomy undermine the consensus needed for energy governance. The act of coordinating so many countries and the technical challenge of estimating the effects of emissions cuts make the UNFCCC an incredibly complex and bureaucratic organization.

The Paris COP in December 2015 was celebrated for the diplomatic efforts of the French government and lauded for providing new optimism about opportunities for a low-carbon transition. The centrepiece was an ambitious (and probably unrealistic) target of not warming the world beyond 1.5°C, but the actual pledges from governments equate to a warming effect between 2.5°C to 3°C [Jotzo, 2015]. To come close to reaching the target, the other institutions highlighted in this article will have to make concerted efforts to work within the UN framework.

In terms of longer-term thinking about energy, the UN Sustainable Development Goals (SDGs) have been established to pursue an agenda for global sustainable development. SDG 7 focuses exclusively on energy, aiming to ensure access to affordable, reliable, sustainable and modern energy for all by 2030.[7] While admirable, critics question how electricity will be brought to 1.2 billion people in just 15 years [Moss, 2015].

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[5] See "Vision and Mission" on the IRENA website at http://www.irena.org/menu/index.aspx?mnu=cat&PriMenuID=13&CatID=9.

[6] See "Background on the UNFCCC: The International Response to Climate Change" on the UNFCCC website at http://unfccc.int/essential_background/items/6031.php.

[7] See "Energy for Sustainable Development" on the Sustainable Development Knowledge Platform website at https://sustainabledevelopment.un.org/topics/energy.

Enter the G20

Energy on the G20 Agenda

The G20 has been the most recent addition to global energy governance discussions. The forum was set up to facilitate cooperation among the world's largest advanced and emerging economies. Its origins lie in meetings of G20 finance ministers and central bank governors after the Asian financial crisis in 1999. The G20 was elevated to the leaders' level in 2008 and declared itself the "premier forum for international economic cooperation" at Pittsburgh the following year [G20, 2009].

Finance issues remain the mainstay of the G20 but the agenda has expanded into other areas of governance with the intention of mediating global economic challenges. It has been less effective at making substantive progress on issues where decision-making has not been driven by finance ministers and central bank governors, and energy has to compete with the 10 or so other priorities on the G20's agenda. Nevertheless, discussions on energy markets have been a common thread through G20 summits. G20 energy working groups since 2008 have focused on reducing price volatility in energy markets, improving energy efficiency, improving access to clean technologies, and promoting sustainable development and green growth [Downie, 2015b].

At the 2009 Pittsburgh Summit, climate change and energy issues received considerable attention. The key question for the G20 on climate has been on how it can add value to the UN negotiations. Climate change has been one of the most controversial aspects of the G20 agenda, with emerging economies (such as India) expressing the view that the G20 should not have a prominent role in advancing solutions to climate change because the UNFCCC is the preferred forum for negotiations [He and Sainsbury, 2015]. The Pittsburgh Leaders' Communiqué included rhetorical support for the UNFCCC ahead of the Copenhagen COP and investment in clean energy, renewables, and energy efficiency. Since Pittsburgh, G20 leaders have continued to affirm their support for the UNFCCC each year, and focused on climate finance, although the more constructive leadership and direction-setting role that the G20 has the potential to play has been overlooked.

Significantly, in Pittsburgh, G20 leaders ambitiously committed to end inefficient fossil fuel subsidies, agreeing "inefficient fossil fuel subsidies encourage wasteful consumption, reduce our energy security, impede investment in clean energy sources and undermine efforts to deal with the threat of climate change" [G20, 2009]. This decision was made based partly on recommendations from the OECD and IEA that eliminating fossil fuel subsidies by 2020 would reduce global greenhouse gas emissions in 2050 by 10%. Since that commitment was made in 2009, fossil fuel subsidies have been reduced, although the subsidies have proven to be stubbornly tough policies to address domestically. In India and Indonesia, in particular, fuel subsidies form part of the social contract between government and society. Calls for the removal of production and exploration subsidies, such as from Barry Carin [2015], have not been acted upon.

The first G20 reference to energy institutions came at the 2011 Cannes Summit, when leaders welcomed the IEF charter and the "commitment to improve dialogue between oil producer and consumer countries" [G20, 2011]. Leaders called for annual meetings and for more institutional cooperation in the form of the IEF, IEA and OPEC releasing a joint communiqué following these meetings. In 2012, Chinese premier Wen Jiabao proposed efforts at multilateral coordination on the global energy market through the G20 [Hirst and Froggatt, 2012]. At the World Future Energy Summit in Abu Dhabi in 2012, he suggested that "we may consider establishing, under the G20 framework, a global energy market governance mechanism that involves energy suppliers, consumers and transit countries under the principle of mutual benefit" [Wen, 2012].

The Russian G20 presidency in 2013 dedicated time to discussions on energy access and efficiency. This resulted in an agreement to continue to support and strengthen quality data for the JODI database. Leaders at the St. Petersburg Summit agreed to "enhance energy cooperation, to make energy market data more accurate and available and to take steps to support the development of cleaner and more efficient energy technologies to enhance the efficiency of markets and shift towards a more sustainable energy future" [G20, 2013]. The only reference to governance was through welcoming IEA efforts to deepen its engagement with non-members.

The Australian G20 Presidency and the Creation of Energy Governance Principles

During the Australian presidency in 2014, there was real progress made on the substantive energy governance problem, especially on how to structure global discussions on energy. At the Brisbane Summit, G20 leaders recognized that the current system of energy governance was not working and agreed to the G20 Energy Principles on Collaboration. Even the oil-producing countries of Saudi Arabia and Russia agreed that there needed to be change.

The principles highlight the central importance of energy access, and also make specific recommendations for reforming governance, for example, making existing institutions more representative and inclusive of emerging and developing countries, collecting and disseminating high quality data, and enhancing coordination between international energy institutions and minimizing duplication [G20, 2014a]. The principles are recorded in Table 2.

Table 2: G20 Energy Principles on Collaboration

1	Ensure access to affordable and reliable energy for all
2	Make international energy institutions more representative and inclusive of emerging and developing economies
3	Encourage and facilitate well-functioning, open, competitive, efficient, stable and transparent energy markets that promote energy trade and investment.
4	Encourage and facilitate the collection and dissemination of high-quality energy data and analysis
5	Enhance energy security through dialogue and cooperation on issues such as emergency response measures
6	Rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption, over the medium term, while being conscious of the necessity to provide targeted support for the poor
7	Support sustainable growth and development, consistent with G20 members' climate activities and commitments, including by promoting cost-effective energy efficiency, renewables and clean energy
8	Encourage and facilitate the design, development, demonstration and widespread deployment of innovative energy technologies, including clean energy technologies
9	Enhance coordination among international energy institutions and minimize duplication where appropriate

Source: G20 [2014b].

The challenge remains how to turn these principles into action. Should some of the principles be prioritized? How do they interact with the UN goal to ensure access to affordable, reliable, sustainable and modern energy for all? In the interests of energy governance institutions, the principles to make international energy institutions more representative and inclusive, to encourage and facilitate the collection and dissemination of high-quality energy data, to en-

hance energy security through dialogue and cooperation, and to enhance coordination appear most pertinent. Interestingly, no energy institutions are named. This could be interpreted as a call for IEA reform, but this is not explicit.

Turkey in 2015 and Next Steps

Turkey's 2015 G20 presidency was structured around a narrative of three "I's:" inclusiveness, investment and implementation [G20, 2014b]. All three are relevant for energy governance: inclusiveness implies energy access for all, investment is important for ensuring energy access and boosting climate financing, and implementation is vital for progress on existing G20 commitments.

The focus on energy access was certainly an important aspect of development that the G20 should not ignore. The headline of the first energy ministers' meeting was a (voluntary) energy access action plan that reflected Turkey's inclusiveness focus. Through the action plan, G20 members will support electricity access in sub-Saharan Africa and share "knowledge, experiences and good practices" [G20, 2015]. Although Turkey's regional focus on sub-Saharan energy access (one of the most energy-poor areas in the world, with an estimated 600 million people without access to energy) is of varying degrees of importance to G20 members, this decision could demonstrate that the G20 will take more of a leading role in energy governance.

In 2015, the first ever G20 energy ministers' meeting recognized advancements in renewable energy, energy efficiency and the removal of fossil fuel subsidies. A toolkit of voluntary options on renewable energy deployment was produced to support the increased uptake of renewables into the energy mix of G20 members. Ministers also discussed implementation of the energy efficiency action plan that G20 leaders had agreed to in Brisbane in 2014, discussed G20 actions to deliver greater energy efficiency (for example, in vehicle emissions) and welcomed progress made over the previous 12 months (mainly by India and Indonesia) to phase out fossil fuel subsidies [G20 Energy Ministers, 2015].

While these actions represent a step forward, toolkits and voluntary options are vague and their implementation remains rooted in domestic policy processes. Robin Davies [2015] has noted that similar voluntary packages have been ineffective with regards to G20 action on development. Furthermore, the communiqué remained silent on energy governance, only indicating support for the UNFCCC process. However, China has scheduled an energy ministers' meeting for June 29–30 under its 2016 G20 presidency, and the implementation of the G20 Principles of Energy Collaboration is on the agenda [see G20 Energy Ministers, 2015].

With regards to these principles, it could be that the G20 initially expected the existing organizations (especially the IEA and IEF) to respond on their own terms. After the 2014 principles were adopted, the IEA appointed a new executive director, Fatih Birol, who has signalled renewed efforts to work with China and other emerging markets. Birol's first overseas visit in the new role was to China, where he announced "China is the most important player in the global energy market" and that his vision was "to develop a truly *International* Energy Agency during my tenure" [Birol, 2015]. However, there has been no clear indication of Chinese membership in the near future from either China or the IEA.

Although the G20 was relatively silent on the issue of energy governance in 2015, the energy organizations themselves have been engaging in G20 energy discussions. The IEA claims to have "actively supported G20 deliberations on energy by providing inputs to G20 Leaders' Summits, Finance Ministers, Sherpa meetings, meetings of the G20 Energy Sustainability Working Group (established in 2013) and more recently, to the first Energy Ministers meeting

in 2015."[8] The IEF similarly notes "the G20 Presidency of Turkey graciously provided the IEF the opportunity to express its views on the draft communiqué of the G20 Energy Ministers' Meeting" [IEF, undated].

Although the meeting of G20 energy ministers had symbolic value, energy ministers should aim higher in future meetings [Sainsbury, 2015]. Leaving energy governance in the hands of existing institutions is unlikely to lead to substantive change. If the G20 wants to make meaningful progress as articulated by its leaders in Brisbane, it will have to move all nine of the principles forward. It is not enough to recognize the challenge; there needs to be genuine discussion of empowering energy governance institutions and new initiatives.

Progress in Energy Governance through the G20

Promoting a premier arrangement for global energy governance – whether elevating an existing body, enhancing coordination of existing bodies or creating a new body – will be essential if G20 energy ministers want to make a substantive and lasting contribution to global energy governance. This article examines three opportunities for the G20 to build momentum in energy governance.

The G20 Calls for IEA Reform

The first option is that the G20 could encourage the expansion of IEA membership to include non-OECD countries. Ambitiously, the G20 could set a firm and ambitious timeframe by which G20 energy ministers and IEA members discuss such a reform.

There is value in the G20 encouraging IEA reform and supporting its efforts to engage with large emerging market and energy consuming countries – in particular, it would be a way to demonstrate progress of G20 principles two, four and five. This could be partly achieved by closer bilateral relations between the large emerging markets and the IEA, but the goal should be full formal membership of non-OECD members. Recent efforts by the IEA are important steps in this regard, but cannot be seen as a substitute for lasting change. Membership means that each country has a stake and shares risk. This is in contrast to a country that free rides by sharing data and gaining benefits, but not collaborating during a crisis.

However, such a course would be politically challenging. It would involve non-IEA G20 members influencing IEA institutional settings, which is unlikely to be viewed favourably, especially by small European members that are not in the G20 club. To make room for new members, existing members would need to give up relative voting power at the institution. Given that China is now the world's largest energy consumer and importer, and India and Brazil are major global energy players, the voting capacity of existing membership would be significantly diluted. The strict national interest of existing IEA decision-makers could prevent OECD countries from agreeing to expand membership to non-OECD members.

It would also be important to ensure that changes to the IEA treaty are discrete and narrowly targeted. That said, membership reform requires a broader consideration of the IEA's priorities and functions, and will need to reflect the interests and perspectives of new members. But there is a natural limit on how far membership of the IEA can extend, at least in the near term, given its role as a consumer forum, rather than a producer forum.

Another possibility is that China and India may not be interested in IEA membership. Both countries are pragmatic about energy governance, seeking the benefits of cooperation but unwilling to compromise on sovereignty. It has been observed that "the most fundamental ob-

[8] See "G20" on the IEA's website at https://www.iea.org/aboutus/globalengagement/g20.

stacle to China becoming an IEA member is Beijing's own hesitation" [Kennedy, 2011, p. 131]. India is also considering all governance options as it develops both renewable and coal-based energy [Saran, 2015].

There are some who believe that a global crisis could become the trigger for IEA reform [Downie, 2015b]. However, it would be dangerous to put faith in a crisis, given there has been price volatility and political instability in energy-producing countries over the past two decades that has proven insufficient to prompt global energy governance reform. Ultimately, the G20 will need to play its cards carefully on IEA reform. Too much interference could set back the reform process. Nonetheless, if the G20 does nothing, necessary IEA reform may come too slowly, and with muted ambition.

The G20 Supports New Initiatives

Another possible path is the creation of a new energy agency to fulfill a particular mandate. This could potentially be a regional grouping, for example an East Asian forum, or a political grouping such as the BRICS group of Brazil, Russia, India, China and South Africa.

In 2003, the Japanese government proposed the Hiranuma Initiative at the IEF meeting in Osaka, which aimed at maintaining energy stability in the Asian region and laid the groundwork for a potential Asian equivalent to the IEA [Toichi, 2003]. Energy ministers from Japan, Korea, China and the members of the Association of Southeast Asian Nations agreed to cooperate on natural gas development, information exchange and price negotiations with oil producers, but nothing more came of the initiative.

A new Asian energy body would need China, India and Japan, Asia's largest energy consumers, to agree to work closely together on an ongoing basis. To add regional heft to the decision, such an initiative would probably also need support from other Asian middle powers such as Korea, Indonesia and Australia.

The G20 will have to decide in such a scenario whether to provide political backing for new initiatives as they develop in the field of energy governance. Such initiatives should be supported if they are constructive additions to the global energy sector, but any regional solution is not ideal and could exacerbate the fragmented global energy architecture.

The G20 Sets Up Its Own Energy Platform

A third option is for the G20 to create a new platform for energy governance.

One possibility is to cement the regular meeting of G20 energy ministers in a permanent "global energy affairs chief coordinating platform," working in cooperation with the IEA and other energy agencies as appropriate.[9] The platform would be able to generate politically feasible, coordinated energy policies. G20 energy ministers could regularly meet to advance the G20 energy principles and facilitate cooperation and dialogue on issues such as energy access, renewable energy and energy efficiency, informed by analysis from the IEA. If a crisis were to occur, the G20 leaders could use the platform to inform their response.

However, such a proposal has many limitations. A new platform needs to avoid duplication with the existing energy forums, particularly in terms of data sharing or dialogue as with the IEA and IEF. A G20 platform would need a comparative advantage in providing recommendations and harnessing energy ministers to act, and leaders if necessary.

[9] Personal communication with H. Yu, 2015.

There are also two long-term challenges. The first challenge is how to include non-G20 countries that are important energy players. There are many oil-producing countries outside the G20 and the rules-based international order that play an important role in global supply. The second challenge is that the G20 is not a "doing" body. Long-term policy actions from an informal, consensus-based organization like the G20 typically run into actions that are solely in the domestic jurisdiction of member states. A proliferation of studies, reports, plans, data collection mechanisms and activity-level pilots ventures into territory where the G20 has traditionally had difficulty in adding value.

Establishing the G20 as a permanent policy body should not be seen as a substitute to lasting governance reform. Instead, the G20 has proven that it is better as a steering committee for governance and providing support for other initiatives, rather than as a doing body. It is also complicated by its reputation as an elite club, which has consequences for establishing a new global institution. Ultimately, the voluntary and flexible nature of the G20 is both its greatest strength and its greatest weakness.

Conclusion

It is possible that the G20 could take all three paths canvassed here – strengthen the IEA, support new initiatives as they arise and set up a new energy governance platform. These actions are not mutually exclusive. The G20 energy ministers' meeting should be seen as a temporary solution to trigger necessary discussions about the state of global energy governance.

The two energy challenges for the world – of ensuring energy access for all and transitioning to a low-carbon future – will not go away. Indeed, they will only become more pressing in the short and long term. While the paths outlined above would constitute progress, it is time to think of the big picture in terms of a new energy governance structure. The nine principles laid out by the G20 leaders at Brisbane have the potential to precipitate long-term change. But if the G20 does not act, energy governance could well progress without it in a different forum.

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The Prospects for Russian Gas in the European Market within the Context of Changing Market Conditions, Regulatory Environment and the EU Policy

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This article presents the results of an integrated study of the current state of the natural gas market in Europe and its prospective development. It examines energy policy, demand, the competitive ability of gas suppliers and the dynamics of external supply. It focuses especially on the impact of the European Union's current and prospective gas market legislation, which, in effect, forms a radically different gas market architecture and changes the operating conditions for all gas suppliers, including Russia. In order to assess market stability, the article evaluates future changes in the European market using economic and mathematical optimization modelling as well as the influence of various external and internal factors on the market. It offers conclusions on the priority aspects of energy policy that apply to Russian gas exports to Europe.

Key words: European Union, Russia, gas, regulation, contracts, energy policy, export policy

The Current Transformation of the European Gas Market

Not long ago, leading research organizations predicted that natural gas would dominate the world energy balance. However, between 2010 and 2014 the situation in the European gas market was the exact opposite. Europe has become the only region in the world with sharply negative gas consumption, which fell by 23% in four years after peaking in 2010 at 598 billion cubic metres (bcm).

In Europe, natural gas consumption is relatively stable in the household sector and gradually declining in the manufacturing sector in response to the active implementation of energy-saving measures. Other factors influencing the decline are the relocation of some energy-intensive manufacturing facilities out of the region and an increase in the use of electric power. Inter-fuel competition is most intense in the European power sector. It is this very sector that

contributed most to the overall decline in gas demand in Europe from 2010 to 2014. In just a few years, the amount of natural gas consumed in generating electricity fell in most countries in the region: in Italy from 33.4 bcm in 2008 to 16.8 bcm in 2014 (−49.7%), the United Kingdom from 24.8 bcm to 14.2 bcm (−42.7%), Spain from 16 bcm to 4.4 bcm (−72.5%).[1]

Natural gas, coal and new renewable energy sources are the main competing fuels in Europe. It is frequently stated that a "low carbon" energy sector is being developed in the region, which would replace coal-fired power generation with gas-fired generation. Despite these statements, the recent practice demonstrates the opposite.

As the share of gas-fired power plants in European electric power generation declined from 2005 to 2014 (from 21% to 16%), coal power generation lost substantially smaller volumes (from 29% to 26%), while new renewable power generation using wind and solar power increased from 2% to 10%.

Renewable power generation has become the absolute priority in the European energy policy in the 21st century. In some European countries, renewable energy sources – primarily offshore wind plants – are gradually becoming comparable to gas-powered generation. Even given the stagnating European economy, renewable power generation (with the exception of hydro), with its uncertain competitive ability and subsidies of around €51.1 billion in 2013 alone, showed a 1.7-fold increase in the last five years [Council of European Energy Regulators (CEER), 2015]. Meanwhile, natural gas has become too expensive, despite its environmental advantages over coal and oil. It has lost more of its position than all other energy resources. The European Union Emissions Trading System – the only economic instrument intended to limit the consumption of environmentally unclean coal, despite being cheaper than natural gas – does not perform well and requires serious reform. However, proposed measures (including "back-loading" 900 million quotas and creating a market reserve) could improve the market but only after 2020. As such, climate considerations in the European context will take second place until then.

Major regulatory changes now are taking place in the European energy market. These changes are based on the Third Energy Package, which continues the liberalization process that began in the 1990s. With the goal of a single competitive, open energy market in the European Union, this legislative package is building a new architecture for the EU's gas market. It sets up the legal basis for network codes and the Gas Target Model, which are being actively developed and implemented. These instruments introduce fundamental changes. The long-term contract system is being transformed and price-setting principles are changing toward gas trading via hubs. National borders are blurring with countries gradually combined in market zones, which threatens the system of bilateral agreements. Network codes are being developed to overcome cross-border barriers. New rules are being proposed for implementing large infrastructure projects. The main innovations in the European gas market are summarized in Table 1.

According to its current energy policy, the EU aims to increase competition and smooth price differences among countries. Measures include a gradual transfer to "gas-gas" competition and the development of short-term trading at gas hubs. The trading system is moving from national markets to unified market zones that do not correspond to national borders, with a liquid hub in each zone. Gas transmission networks are also being unbundled from other activities of vertically integrated companies and a single European platform and regional platforms are being set up to reserve capacity. Network codes are being developed and implemented. The system of free trade and gas flows provides for a range of excess and reversible capacity for transportation. The scale and complexity of these changes are such that they require permanent

[1] Bentek data.

regulation, which calls for increased decision-making authority for the European Agency for the Cooperation of Energy Regulators (ACER) and national regulators.

Another European energy priority is the active support of energy-saving measures. According to the World Energy Council, the energy intensity of the European economy fell from 0.087 per koe/$05p in 2000 to 0.067 koe/$05p in 2014, or by 31%. This impressive change was due to both the transformation of the economy itself, including closing energy-intensive capacities, and the implementation of energy-saving measures. Target was to reduce energy consumption by 20% from the calculated level without implementing relevant measures by 2020 and by 27% by 2030.

As of 2015, the trajectory of changes in consumption suggests that the EU will meet the planned level by 2020. However, that will be only partially linked to the success of energy-saving measures. Around a third of the targeted reduction in energy consumption will come from the fact that economic growth in region is lower than expected.

Measures regarding renewable energy sources and reduced overall energy consumption will allow the EU to meet another important target in its current energy policy – enforcement energy security by reducing dependence on external energy resources.

Table 1: The European Union's Gas Market: Key Directions for Development

	The situation at the juncture of the 20th and the 21st centuries	**The current situation (2015)**	**Development plans**
Competition	**Limited competition and number of suppliers**; market concentration is high	**Insubstantial increase in competition**; the number of suppliers is growing mainly due to liquified natural gas (LNG); market concentration remains high	**High competition**; deconcentrated market
Market borders	**Separate national markets**: bilateral intergovernmental agreements / large consumers and suppliers	National markets and considerable differences between the countries remain. **Cross-country zones set up as pilot projects**; integration processes are developing; less pronounced national sovereignty gas-related dispute resolution (deliveries, infrastructure)	**Market zones** (untied to national markets); blurred national borders and cross-border barriers; deep market integration; likely increase of alliances with third parties, including non-market solutions
Price differences	**Countries highly differ** in terms of wholesale and retail prices	Price differentiation remains, but there is a **tendency toward price convergence at the hubs**, primarily in western Europe	**A smoothing of price differences** among various market zones, formation of a "fair price"
Contracts	Long-term contracts dominate (**linked to oil prices**)	**Hybrid model** with simultaneous presence of long-term oil-linked contracts and deliveries with hybrid price formula; reduced contract lengths	A movement toward short-term trading based on **"gas-gas" competition**
Hubs	**Start of gas trading via hubs**, with a small number of traders	Total number of hubs created (18, including 9 main ones); hub-based gas trading leaning toward northwestern Europe; **low gas hub liquidity**	**A liquid hub in each market zone,** with a large number of suppliers and traders

	The situation at the juncture of the 20th and the 21st centuries	The current situation (2015)	Development plans
Infrastructure	**Used mainly by vertically integrated companies (often on a monopoly basis)**; limited third-party access; insufficient overall infrastructure with no reverse deliveries	**Gas-transmission networks unbundled from vertically integrated companies.** Pilot implementation of booking network capacities on market terms; **third-party access.** Investment signals towards the expansion of capacities have not developed. Reverse deliveries	Full launch of **all-European/ regional platforms for booking capacities. Excess transportation capacities** and other infrastructure (underground gas storage, LNG terminals) set up; reverse flows and third-party access widely available. capacity constructed for external deliveries only given clear investment signals
Regulators	**Insignificant** role of national regulators	**Strengthened role of national and European regulators**	**Further strengthened role of ACER and national regulators**
Network codes	**Absent** network codes; high cross-border costs	**Development and pilot implementation** of network codes for free gas flows and reduced transaction costs	**Full implementation** of network codes; a significant reduction in cross-border costs

Note: ACER = European Agency for the Cooperation of Energy Regulators.

Source: Kulagin, Mitrova [2015].

EU Regulatory Initiatives in 2014–2015 and Their Impact on Russia's Interests

In the process of energy market liberalization, the region's growing dependence on imports and the energy sector's movement toward decarbonization, the EU's energy priorities are changing fundamentally. These changes are reflected in the development of new initiatives and their implementation as regulations. Many new documents directly or indirectly, to a greater or a lesser extent, touch upon Russia's interests in a key energy market and affect existing relationships. There were several such strategic and regulatory initiatives in 2014–15.

The European Commission [2014c] presented its new climate and energy programme at the start of 2014. The programme extends the targets for renewable energy sources, carbon emissions and energy efficiency from 2020 to 2030.

The same approach was used in the communication on energy efficiency published in July 2014 [European Commission, 2014a]. This document states that if the energy efficiency indicator increases by 1%, gas imports to the EU will fall by 2.6%, thus reducing the EU's dependence on external energy sources. Overall, the policy on energy efficiency and energy saving is one of the most effective mechanisms to reduce overall energy consumption and is likely to produce the largest reduction in gas consumption.

In May 2014 the European Commission presented the new European Energy Security Strategy [European Commission, 2014b]. It identified dependence on import supplies as a key energy security issue. The strategy includes an analysis of the dependence of individual countries on Russian gas. It includes short-term measures to improve energy security such as increasing the capacity of underground gas storage facilities, developing infrastructure including reverse flows, reducing energy consumption and switching to alternative fuels. It also several long-term measures:

- increasing energy efficiency with an emphasis on the energy efficiency of buildings and industrial facilities;

- increasing energy production in the EU (including renewable energy sources, fossil fuel extraction and nuclear energy) combined with the diversification of both energy resources and delivery routes;
- developing competition in the internal EU energy market with subsequent infrastructure development to increase the flexibility of flows;
- engaging in dialogue with external suppliers in a "single European voice" and informing one another before reviewing or signing any third-party agreements that could affect the security of EU energy supplies;
- developing cooperation and overcoming infrastructure limitations in order to reduce risks at both the regional and the European levels.

The European Commission's [2015] Energy Union strategy, announced in February 2015, is receiving the full attention of the European governments. This strategy has created uncertainty about any prospective energy cooperation between Russia and the EU. Even according to initial assessments, it is one of the most significant initiatives to regulate the EU energy market since the adoption of the Third Energy Package. It involves transferring a substantial amount of sovereign decision-making powers to the European Commission, including cooperation with third parties. The Energy Union strategy involves:

- strategic cooperation with Algeria, Turkey, Azerbaijan, Turkmenistan, the Middle East and Africa (with no mention of Russia as a strategic partner), including a memorandum to construct the Trans-Caspian gas pipeline between Turkmenistan and Azerbaijan;
- informing the European Commission of any energy-related intergovernmental agreements between EU members and third parties at an early stage;
- changing regulations to require gas companies to publish the terms of major purchasing contracts including prices, volume and delivery;
- accelerating the implementation of the Third Energy Package and extending the authority of ACER and national regulators;

In February 2016 the European Commission launched its landmark security of gas supply package. It released new proposals for a raft of measures that will shore up the prevention of gas crises and ensure better coordination and support among EU countries in any disruption of supply [European Commission, 2016c].

The European Commission [2016b] has also published a proposal to tighten up intergovernmental energy agreements between EU country and non-EU countries. The new rules will allow it to take action before such agreements are signed if it assesses that such an agreement could affect the security of gas supplies in another EU country or hamper the functioning of the EU's energy market.

The European Commission has outlined how to improve access to a rapidly developing global market for liquified natural gas (LNG) and improve gas storage across the EU. This would allow EU countries that depend on very few gas suppliers to diversify their supply and hence strengthen their energy security [European Commission, 2016a].

This process of updating the regulation led to a discussion about aligning existing bilateral agreements related to long-term Russian gas deliveries with EU legislation. A possible change in the standard of security of gas supply can also affect the current relationships between the parties. Relations are further affected by the development of reverse gas deliveries, which support free gas flows. Therefore, several new challenges and uncertainties arise with regard to Russian gas deliveries to Europe. This situation is exacerbated by an anti-trust investigation of Gazprom, with the EU accusing Gazprom of misusing its position in the eastern European markets. There is also a lack of clarity about using gas pipelines to their full capacity, including the OPAL pipeline project and other new projects.

It is also necessary to emphasize the active process to extend the legislative enforcement of the Third Energy Package's requirements to the Energy Community countries, which has included Ukraine since 2012. If Ukraine meets the European requirements on unbundling transmission networks, sharing information publicly and setting up reverse flow routes, it could lead to a review of export gas flows from Russia through Ukraine and affect cooperation on gas deliveries to Ukraine.

The EU's persistency and consistency in implementing its priorities to develop the energy sector, despite resistance from some EU members, testifies to the fact that these changes are irreversible and long term.

Positive signals about cooperation between Russia and European consumers include agreements to construct the third and fourth lines of the North Stream gas pipeline to continental Europe. Large European companies will participate in this project. Another positive signal is the fact that mutually acceptable decisions to overcome the limitations of the Third Energy Package are beginning to take shape regarding large infrastructure projects, including those with Russia's participation.

A decrease in 2015 natural gas prices delivered under long-term oil-linked contracts has increased European consumer interest in Russian gas and nearly eliminated the gap between contract prices and hub/gas exchange prices. Initiatives to transform the pricing system in the market and accelerate the diversification of supply sources have thus become less relevant.

A Reassessment of Projected European Gas Demand

Various factors that determine the current and projected development of the European gas market suggest a consistent downward trend. In the last decade research organizations have been adjusting their projections of European gas demand by 2025 downward by about 250 bcm. Research done at the Energy Research Institute at the Russian Academy of Sciences (ERI RAS) and the Energy Institute at the National Research University Higher School of Economics shows that European demand is no longer growing rapidly [Kulagin and Mitrova, 2015]. Given reduced demand, even the stabilization of gas consumption at current levels with a gradual increase in some sectors (such as electricity and transport) would be considered a favourable scenario.

The main hopes for restoring demand for gas in the power generation sector, in the context of increased electric power demand and decommissioned nuclear power plants, are linked to measures to limit coal-powered generation. These measures include building an effective payment system for carbon emissions and closing old coal power plants under the Large Combustive Plant Directive and the new Industrial Emissions Directive [European Parliament and Council of the European Union, 2001, 2010]. As a result, the European power sector could become a leader in gas consumption by 2025 if gas consumption by households, the commercial sector and the industrial sector is reduced (see Figure 1). In the long term, households and the commercial sector prefer electricity as the most convenient energy source. Gas consumption in the European industrial sector will likely increase temporarily as the economy continues to recover from the 2008 global financial crisis and industrial growth takes place. Gas consumption could increase up to 7%, although the overall trend of reduced industrial demand will continue. The transport sector is projected to see the fastest consumption growth. However, in absolute terms gas consumption will remain relatively low – it is projected that the current 2 bcm will go up to 6 bcm by 2025 in the car and marine transportation sectors. This increase will be partially due to new emissions requirements for ships in the Baltic Sea.

Therefore, in the medium term, natural gas will face tough competition in the European market, primarily in the power sector.

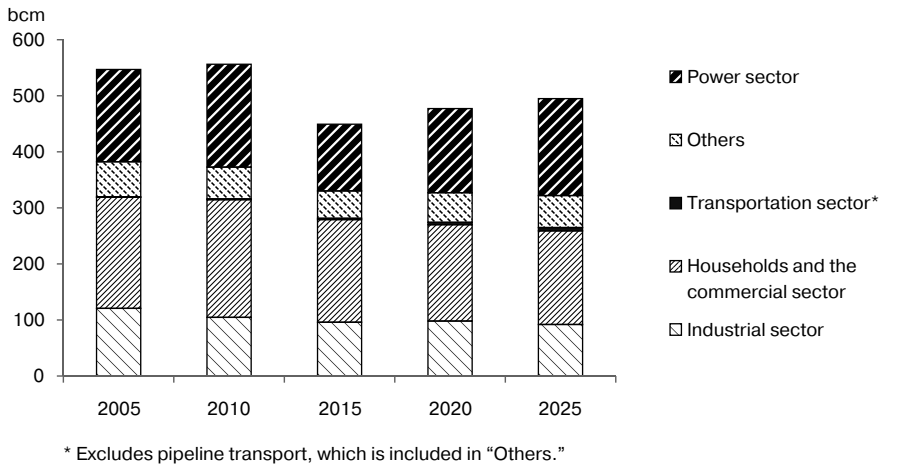

Figure 1: The Structure of Gas Consumption in Europe, by Sector

Sources: Estimates by the Energy Institute at the Higher School of Economics and Energy Research institute at the Russian Academy of Sciences, using the SCANER modelling and simulation complex (see [Makarov, Mitrova, Kulagin et al., 2011]), who analyze the gas market in 41 European countries.

The Impact of Policy and Regulation on Russia's Position in the Gas Market

During the Soviet years, a system of relationships developed in the gas market between the USSR and the European consumers. It was part of integrated cooperation between these countries. The leaders' decisions allowed the USSR to sign extensive contracts that then laid the basis for the construction of large-scale pipeline networks and gas deliveries for many decades ahead.

Russia has been exporting substantial volumes of gas to Europe for around 50 years. Until recently, no one doubted the reliability of the supply or the mutually profitable cooperation. However, transit and geopolitical issues in the 21st century have gradually politicized the gas relationship and taken it beyond a purely commercial partnership.

At the same time, European integration continues, producing new approaches to regulation and taking the gas industry beyond national jurisdictions. These factors also completely change the foundation for further partnership. Indeed, the shape of this new cooperation is not yet clear.

European gas trade involving direct bilateral contracts with guaranteed prices and volumes is increasingly losing out to short-term transactions with buyers unknown at the time of trading. The European Commission plans to control the terms of long-term contracts, so there is no link between price and delivery terms and other elements of cooperation.

The requirement to provide third-party access to gas pipelines, stipulated in the Third Energy Package, has a substantial impact on Russian-European cooperation. According to this legislation, only 50% of capacity can be used freely, and the use of the remainder must be agreed as an exception with the European Commission.

However, it is not always possible to get such permission for projects with Russia's participation. There have been several situations of projects approved by national authorities and regulators failing to get approval by the European Commission.

Nonetheless, there are some positive aspects. It is now possible to use existing transportation capacities to deliver Russian gas. This does not depend on the ownership of facilities, so delivery routes can vary. According to the Third Energy Package, obligations to develop infrastructure are transferred to the network operator (rather than the vertically integrated gas supplier as in the past) [European Parliament and Council of the European Union, 2009]. The operator sets up and develops the necessary infrastructure based on expected demand and deliveries. In practice this eliminates the need for massive investment from producers to build gas transportation capacity in Europe. In practical terms, however, implementation remains uncertain, especially given the lack of clarity over large transportation projects.

Gazprom's participation in short-term trade enables it to increase sales and earnings, although much depends on the market situation and the transformation in long-term contract terms.

Gas deliveries from Russia are gradually adapting to changing market conditions and requirements. Buyers are given discounts and there is partial spot-price indexation. The take-or-pay approach is changing, in part thanks to deferred obligations.

If price formulas from before the global financial crisis had remained the same, the average weighted price of Russian gas delivered to Europe in 2014 would have been 25% higher than the actual price sold by Gazprom to the region. In 2015 Gazprom held a pilot auction where European suppliers could purchase gas for the winter 2015–16 and have it delivered to various points in Europe. Gazprom will continue to hold such auctions in the future.

The judgements of commercial courts on gas deliveries involving European buyers and Qatar, Algeria, Norway and Russia in 2012–13 are one reason for the changes in contract terms and prices. These judgements were mainly made in favour of the buyers. They forced the suppliers to make concessions, as well as motivated them to resolve disagreements before matters went to court.

At the end of the 20th century and the beginning of the 21st century, Russian companies, observing the experience of the top world energy companies, sought to establish production chains that maximized business effectiveness in external markets. In the gas market, such a chain involved transportation after crossing the Russian border (including establishing pipeline capacities), storage, sales to end consumers, and even the purchase and ownership of assets in further gas utilization, including power generation. In terms of profitability, this model is preferable to separate business activities, because it minimizes costs and provides stable, guaranteed sales. However, from the point of view of the European regulators, vertical integration inhibits competition and free trade.

As a result, the EU adopted legislation to prevent production and sales chains created and owned by a single company. Every type of business in Europe thus must be considered separately, which substantially reduces the market's attractiveness to Russian companies and narrows their interests to simple deliveries with limited participation in storage and transportation (often restricted by assets they already own). The European Commission becomes a third party to signing and implementing contracts that been historically been bilateral. The European Commission intends to control and approve various aspects of cooperation.

Political complications between Russia and the EU have led to tougher political statements in respect to gas cooperation. One goal of EU energy policy is reduced dependence on Russian gas, and disruptions in Russian gas supplies are among the most debated crisis scenarios. Given excess gas supply and low demand, the current atmosphere threatens not only the growth of Russian gas imports to Europe, but also the prolongation of existing contracts once they reach the end of their term. Indeed, even retaining already signed contracts could be at risk in the most negative scenarios.

Imports to Europe and Russia's Competitive Ability

This article analyzes the European regional gas balance and potential exports by gas-producing countries to assess the import situation with Europe, the potential for change and the level of competition. In 2006, growth in European demand for gas began to stagnate and then declined sharply (see Figure 2). Given many factors influencing the state of the market in the medium and long term, there is a consensus among experts about further demand dynamics in Europe. According to ERI RAS assessments, there is some basis for growth to recover, although it is unlikely that the peak demand recorded in 2010 would ever be achieved again.

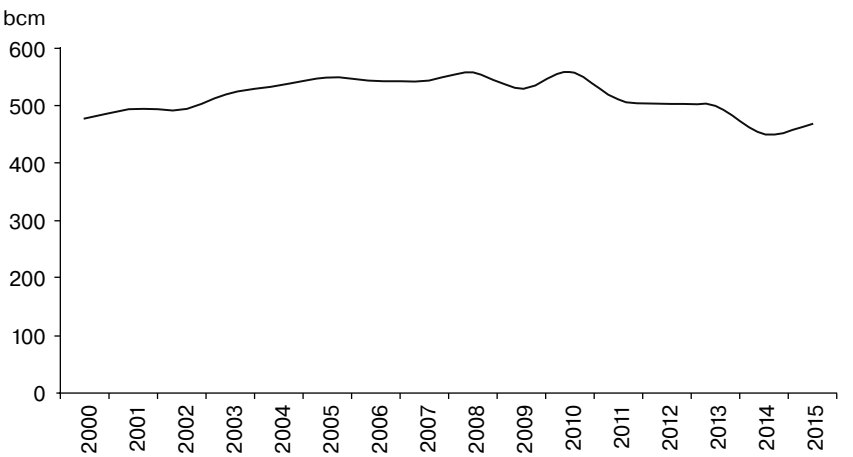

Figure 2: Gas Consumption in Europe, 2000–2015

Sources: International Energy Agency [2015a].

At the same time that demand fell in 2005–14, gas production in Europe decreased by nearly 20%. The slump was recorded in the United Kingdom, Germany, Italy and Denmark. Limitations on gas production were enforced in the Netherlands because of potential earthquakes. For the decade beginning 2015, internal gas production in Europe is expected to fall at a slower rate, to around 200 bcm by 2025 (see Figure 3).

Between 2010 and 2015, Algeria, a main pipeline supplier, cut deliveries to Europe, because of insufficient volumes of gas for export. Norway gradually increased delivery, and Russia showed a varied dynamics (see Figure 4). At the same time, LNG exports fell sharply, although the global LNG trade stabilized temporarily and supplies were redirected to the Asian market.

European demand is expected to grow moderately from 450 bcm in 2015 to 495 bcm in 2025, with import demand expected to rise from 210 bcm to 295 bcm. Europe's import needs for 2015 were almost entirely met by minimum contracted gas deliveries. Uncontracted opportunities are not likely to appear before 2020. A significant number of long-term contracts will expire by 2025, and some of these volumes will probably be replaced by short-term trade.

To assess the possibility of higher volumes of gas exported to Europe than to other regions, exports were calculated for all routes in the basic scenario except for Europe. Free potential gas exports will total around 450 bcm, which is 1.5-fold greater than European gas demand (see Figure 5). More than 220 bcm is estimated to come from Russia (provided transit through Ukraine is possible). Delivery to Europe will substantially increase from North America (by

60 bcm) and the Middle East and the Caspian region (by 42 bcm). Europe's potential for diversified imports will thus increase significantly.

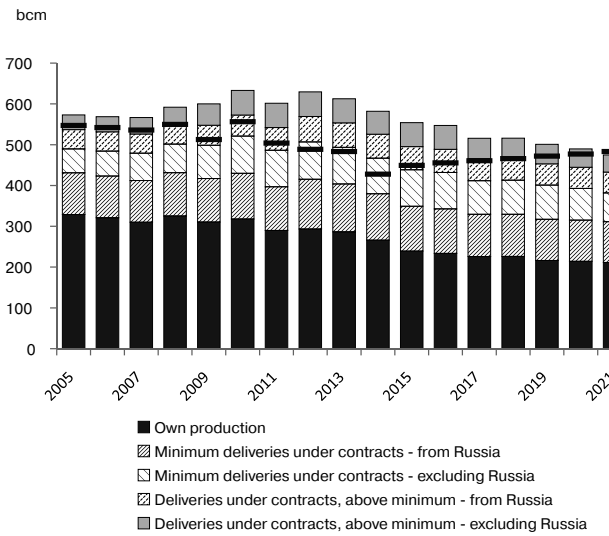

Figure 3: Projected European Gas Balance, 2005–2025

Note: bcm = billion cubic metres.

Source: International Energy Agency [2015b], Energy Research Institute at the Russian Academy of Sciences.

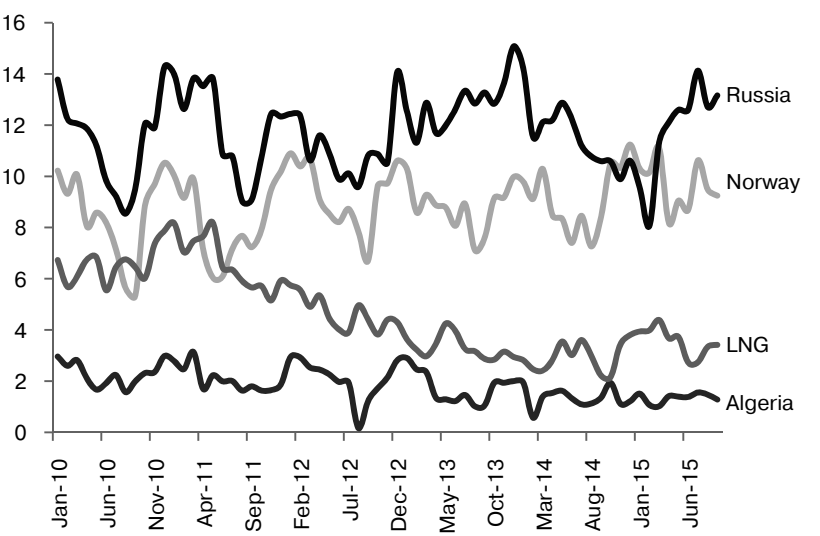

Figure 4: Physical Gas Flows to Europe

Note: bcm = billion cubic metres; LNG = liquified natural gas.

Source: International Energy Agency [2015b].

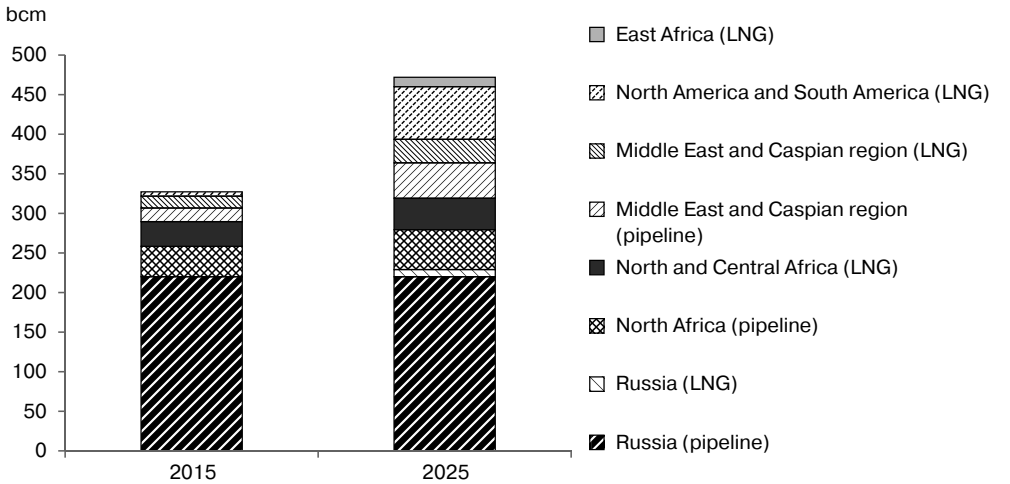

Figure 5: Potential Gas Imports to Europe, by Supplier

Note: bcm = billion cubic metres; LNG = liquified natural gas.

Source: Assessments made by the Energy Institute at the Higher School of Economics and the Energy Research Institute at the Russian Academy of Sciences.

There is now significantly greater potential for LNG deliveries, given the presence of infrastructure and supplier capacity (see Figure 6).

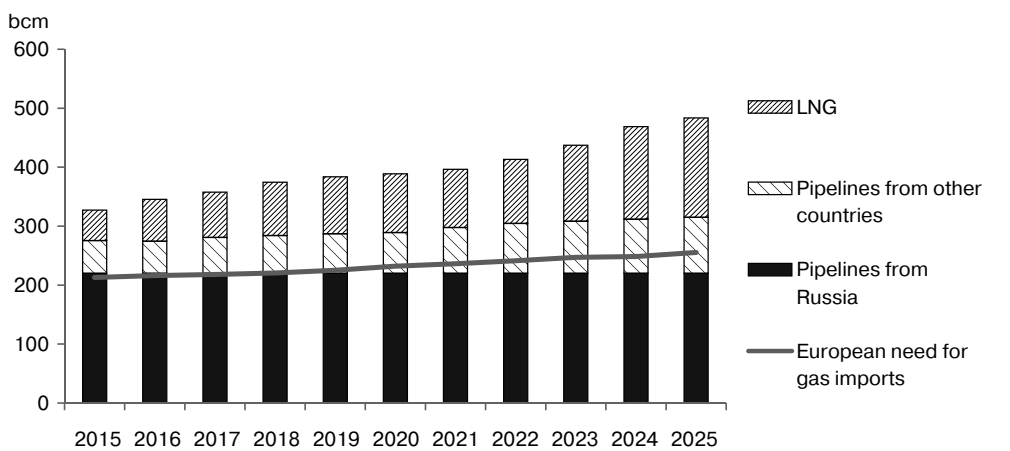

Figure 6: Potential for Pipeline and Liquified Natural Gas Imports to Europe

Note: bcm = billion cubic metres; LNG = liquified natural gas.

Sources: Energy Institute at the Higher School of Economics and Energy Research Institute at the Russian Academy of Sciences.

Changes in expected gas demand in Europe have eliminated the need for large volumes of potential supply, compared to earlier expectations. This includes around 50% of potential supplies from Russia. These changes have also led to a significant reduction in projected final prices (see Figure 7).

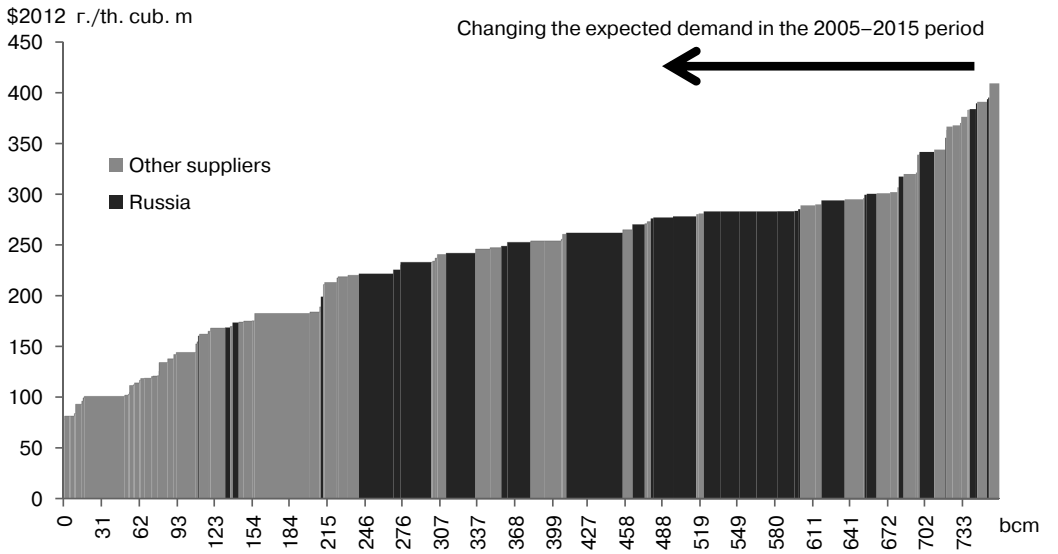

Figure 7: Gas Supply Curve in Europe in 2025

Note: mcm = thousand cubic metres; bcm= billion cubic metres. Based on an analysis of potential gas supply in Europe, taking into account internal production and excluding exports. Gas demand is based on estimates by the International Energy Agency, 2005 and 2014.

Source: Viatcheslav Kulagin and Tatiana Mitrova [2015].

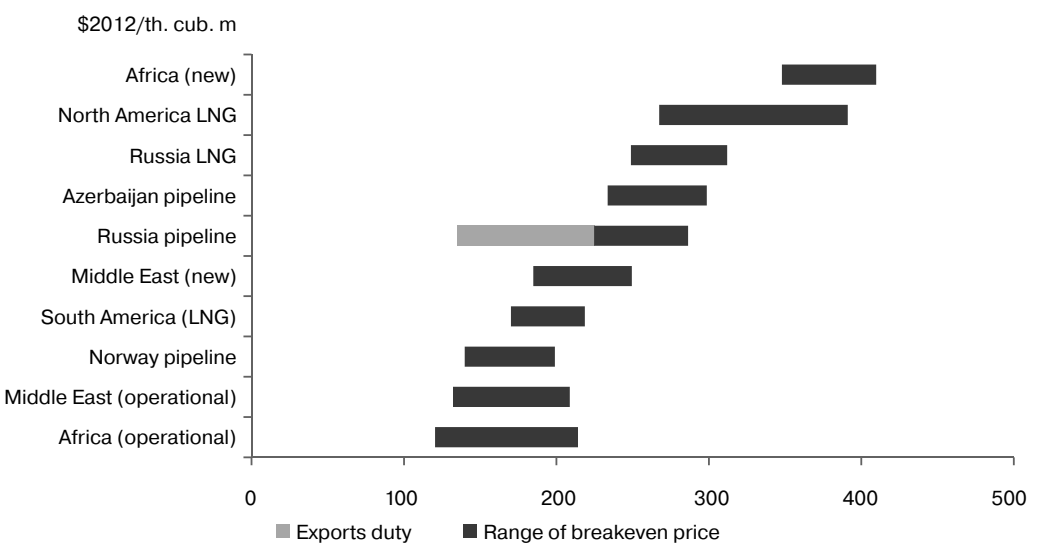

Figure 8: Break-Even Price Ranges for Gas Supplies to Western Europe in 2025

Note: mcm = thousand cubic metres; LNG = liquified natural gas.

Source: Estimates by the Energy Institute at the Higher School of Economics and Energy Research Institute at the Russian Academy of Sciences.

The competitiveness of available gas supply differs considerably, depending on the specific delivery points in Europe. It is determined by total gas delivery costs. Russian gas is significantly different in terms of estimated costs: the level of export duty depends on the sale price. Currency is also a factor, as most costs in Russia are incurred in roubles. In 2014–15, as the rouble weakened substantially against the U.S. dollar and the euro, production and transportation costs in Russia fell, as expressed in hard currency. This improved the competitive ability of Russian oil and gas products in external markets and lowered the break-even point for production and delivery.

Among the new suppliers to western Europe, Russian gas is second only to gas from the Middle East in terms of competitive ability (see Figure 8). The most expensive deliveries to this region are from the United States, Canada, Mozambique and Tanzania. Russian gas is more competitive in central and eastern Europe because Russian transportation costs are lower and costs are increased for other suppliers.

Changing Market Conditions

The prospects for the European gas market depend on several factors: demand, supply possibilities, price and contract terms for deliveries. Companies and states must consider the most likely scenarios and evaluate market sensitivities in order to be able to plan.

Using a basic scenario and economic and mathematical modelling (simulation) tools, this article assesses market stability in various situations and the consequences for Russian gas deliveries and export revenues.

The Basic Scenario

The basic scenario assumes that after 2015 gas demand in Europe will resume growing by 0.1% per annum until 2025 and internal production will continue to decrease (see Figure 3). Increased imports will come mainly from Africa, the Middle East and the Caspian region. Approximately 15 bcm of LNG will be delivered to Europe from North America. The volume of gas exports from Russia will stabilize (see Figure 9).

As of 2016, European gas spot prices will gradually reach around $308 in 2012 U.S. dollars per thousand cubic metres (mcm) in 2012 dollars by 2025. The difference with the oil-linked gas prices will be around $50–70/mcm in 2012 dollars.

Key Factors

To assess the sensitivity of the European gas market to key changes, the following factors have been assessed: measures to improve energy efficiency and to promote the use of renewable energy sources, low demand in Asia, high production in the Middle East, and accelerated European and global economic growth.

Measures to promote energy efficiency and the use of renewables would prompt a 12% decrease in gas consumption in Europe from the basic scenario by 2025. Competition among suppliers would grow and, as a result, deliveries from all regions would decrease. However, this decrease is more relevant for the LNG imports, which are redistributed in the global market. An excess in supply would lead to a price reduction of $16/mcm (see Table 2).

Low demand in Asia would also lead to excess supply. However, in this case LNG volumes delivered to Europe would increase due to the volumes not required in Asia. Therefore, the countries supplying Asia would partially reduce production and reorient toward other markets. Additional LNG arriving in Europe would mainly displace Russian deliveries. Demand would grow by 3 bcm due to lower prices.

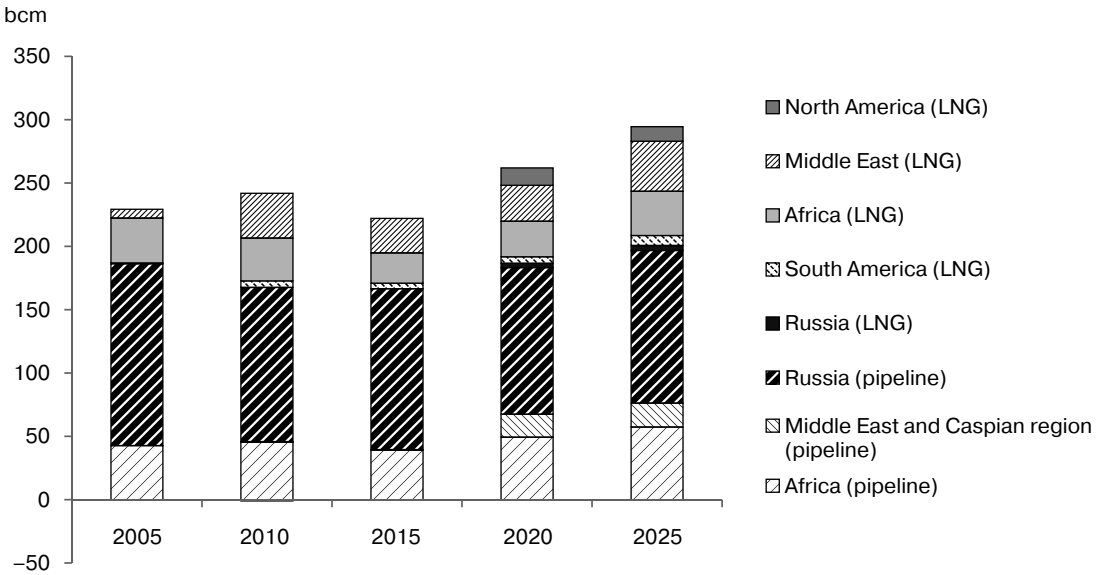

Figure 9: Gas Imports to Europe (Basic Scenario)

Note: bcm = billion cubic metres; LNG = liquified natural gas.

Sources: International Energy Agency [2014], Energy Research Institute at the Russian Academy of Sciences, the Energy Institute at the Higher School of Economics.

Table 2: Main Indicators in the European Gas Market (Europe 41) as of 2025

	Consumption, bcm	**Spot prices, U.S. dollar /mcm**	**Imports from Russia, bcm**	**Imports from the Middle East, Africa and the Caspian region, bcm**	**Imports from the United States, bcm**
2010 indicators	556	261	122	115	0
2014 indicators	428	290	123	67	0
Basic scenario	495	308	124	151	12
Measures to promote energy efficiency and renewable energy sources	438	292	109	117	6
Low demand in Asia	498	286	107	166	17
Increased production in the Middle East	496	297	111	168	9
Accelerated European and global economic growth	508	356	144	129	28

Note: bcm = billion cubic metres; mcm = thousand cubic metres.

Sources: Estimates by the Energy Institute at the Higher School of Economics and Energy Research Institute at the Russian Academy of Sciences.

Growing gas production in the Middle East would lead to more deliveries from this region both to Europe and Asia. This would displace more expensive gas from other producers. Russian deliveries to Europe would fall by 13 bcm. Increased deliveries from the Middle East would have a relatively modest impact on the market because the projected period has a small range (based on the investment cycles necessary to implement new projects). In the long term, the region has the potential for a more substantial increase in gas production and export infrastructure.

Accelerated growth in the European and global economies would create the most favourable conditions for gas exporters. Demand, prices and import volumes would grow. However, the import structure would change. Gas from the Middle East and Africa would partially be routed to Asia. Here demand growth would be more significant, supported by sales logistics that makes it easy to redirect deliveries. The niche freed up in Europe would be filled by deliveries from Russia and North America.

Possible Pricing Changes for Russian Gas in Europe

The gas trade in Europe is undergoing a transformation. The spot market is actively developing. Suppliers are adapting long-term contracts to market conditions to be more competitive and to minimize the risks of court appeals against delivery terms. While some exporters partially or fully link a spot price in their contracts, others are not abandoning oil indexation but relaxing other terms. In these conditions, market strategies are important for all suppliers. To evaluate the advantages and disadvantages of Russia's export pricing policy, delivery volumes and sales prices have been calculated, using export revenues as the main criteria.

The calculations suggested a gradual recovery of oil prices beginning in 2016 up to $94 in 2014 U.S. dollars per barrel by 2025. Gas spot prices would also grow, although at a slower pace. As a result, the highest gas price would be in the scenarios most closely linked to the oil price. However, in such cases the consumer chooses the minimum contractual obligations and refuses to prolong the contracts. As a result, delivery volumes and export revenues would be the lowest of all the scenarios.

The other extreme would be a move away from all the contracts and sales through the spot market alone. This would generate a fall in delivery volumes as clients would be lost as they purchase from other suppliers for various reasons.

The most favourable option in terms of earnings would be for Russia to retain its contracts in volume terms but bring its price as close to the market price as possible. This could be done via discounts or partial spot price indexation. Russia would make additional sales via short-term trade or auctions, which were piloted in 2015.

One of the most important issues is the term for selecting gas over minimum contractual obligations. The market functions in such a way that there is no need to select gas above the obligations when it is possible to purchase it in the short-term market. However, if this market were to become more expensive, it would be better to select additional contracted gas. Therefore volumes above the "take or pay" obligations would hold back gas spot prices in deficit conditions. They would, in fact, set the highest price and make long-term contracts the most expensive, regardless of the market situation. For this very reason, it would be helpful for suppliers to reduce the range of free selection and not aim to set concessions.

Conclusion

It is already difficult to view the European gas market as providing high prospects for growing Russian gas exports. Fast demand growth is a thing of the past and the decline in internal production is slowing, but the number of gas suppliers and potential delivery volumes are increasing. There is more competition in the European energy market, both among gas suppliers and among fuel types. There will likely be price wars before 2025, primarily with American LNG. It is important for Russia to pursue a flexible export policy that could adapt to the market conditions.

Regulatory changes in the EU are forcing changes in market strategies. It is now difficult to build a vertically integrated chain or to implement transportation projects on a bilateral basis, without involving the European Commission. However, there is the potential for saving on the construction of new pipeline systems by demanding that the EU implement these projects under its new legislation. The European market remains a major one for Russia's gas exports. However, Russian companies and government need to work together in their cooperation with European colleagues, at both the political and economic levels. Only then will the market share be retained and Russian companies' interests be ensured.

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The Effect of the Commodity Boom on Indonesia's Macroeconomic Fundamentals and Industrial Development

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The end of the commodity boom in 2012 once again exposed Indonesia to the vulnerability of the commodity price shocks. This article reviews how Indonesia managed its natural resources in 2001–12 and when the commodity boom ends. What are the lessons learned? Indonesia's experience is similar to that of other countries rich in natural resources, including the crowding-out of non-commodity sectors, premature deindustrialization, protectionist trade regimes, fiscal inefficiency, slow skill accumulation, rising inequality and environmental damages. In the aftermath of the global financial crisis of 2008–09, the early trade-policy response at the end of the commodity boom is inward-looking and protective of domestic markets and industries and aims to increase the value-added of commodities by downstreaming. This trend is clearly reflected in the 2014 Trade Law, the 2014 Industry Law and the mineral export ban, which was introduced in 2009 through the 2009 Law on Mining of Coal and Minerals and took effect in 2014. Indonesia should learn from other countries in managing its resource revenues, such as through a commodity fund designed to fit its domestic specificity. Reindustrializing, increasing agricultural productivity beyond palm oil and tapping the country's potential in the services sector including tourism and creative industries are also necessary to promote diversification in production and trade. Resource management policy should also include stronger environmental regulations.

Key words: Indonesia, commodity boom, structural transformation, countercyclical fiscal policy, inequality, environmental degradation

Introduction

The commodity boom from 2001 to 2012, with the exception of the global financial crisis in 2008, highlighted the vulnerability of the resource-dependent economy of Indonesia to external shocks. This is not the first time that Indonesia had experienced a resource boom and was forced to make a large adjustment when the boom came to an end. In the 1970s, there were two oil booms: 1973–74 and 1979–80. When oil prices slumped in the early 1980s, Indonesia was able to push through the necessary measures to reverse the effects of the shocks. The political economy of the 1980s, when the economic technocrats, the so-called "Berkeley Mafia," were extremely influential in shaping Indonesian president Soeharto's economic policies, was favourable because policies were coordinated under his strong leadership. During the post-oil boom in the late 1980s and throughout the 1990s, Indonesia was able to take off as an industrializing economy with a high average growth of around 7%, supported mainly by manufactured

[1] The views expressed here are those of the author and do not reflect those of the World Bank.

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goods and exports. The end of the commodity boom in 2012 once again exposed Indonesia to the vulnerability of the commodity price shocks. This article reviews how Indonesia managed its natural resources during the commodity boom period of 2001–12 and when the commodity boom ended. What are the lessons learned? As Ross Garnaut [2015] says, "The test of the 'resources curse' is how a country responds to the end of the boom."

This article argues that the natural resource boom in 2001–12 was a step backward in Indonesia's industrialization trajectory, with much of the economy driven by consumption-led growth fuelled by growth in the extractive industries. This step backward was evident when the commodity boom ended in 2012 and most of the country's macroeconomic fundamentals were deteriorating. Revenues from the resource boom were spent on poorly targeted energy subsidies instead of on productive investment such as infrastructure or instead of saving the windfall in a resource fund. The high share of commodity exports also created a mini Dutch disease and crowded out other non-commodity and tradable sectors. During this commodity boom, Indonesia also saw rising inequality and environmental degradation. Indonesia's experience is not uncommon to other resource-rich countries that have experienced a "resource curse" [Overseas Development Institute [ODI], 2006].

Indonesia's Successful Economic Stabilization Reform in the Post-1970s Oil Booms

Indonesia experienced a windfall of oil revenues from two oil booms in 1973–74 and in 1979–80 (see Table 1). These booms enabled Indonesia to resolve the balance-of-payments issues and budget constraints that had accumulated since President Soekarno's era. Most importantly, Indonesia had used the oil revenues to implement ambitious development programs, including physical infrastructure and social development in rural areas and outlying regions [Thee, 2008]. Many of these regional developments were mandated by the so-called presidential instruction (*Instruksi Presiden*, or *Inpres*). Indonesia was not the only country to depend on resource rents to promote regional development. Many developing countries sustained strong growth in the early years of their "catching up" phase by using public revenues from mineral rents to promote broadly based development [Hill, 2000; Garnaut, 2015].

Table 1: Indonesia's oil exports, 1969/70 to 1975/76 (millions of U.S. dollars)

1969/70	$384
1972/73	$965
1973/74	$1,729
1974/75	$3,727
1975/76	$4,204

Source: Thee [2008].

Although the oil revenues were used to promote regional development, the oil boom period in the 1970s coincided with Indonesia's industrialization policy of import substitution. The boom in the 1970s drove Indonesia to pursue one of the most inward-looking patterns of industrialization among Asia's developing countries. In the first "easy" phase of import substitution, it imposed tariff and non-tariff protection including total import bans on some goods

already assembled or manufactured in Indonesia, enabling locally made light consumer goods and consumer durables to replace imported products. In the late 1970s, Indonesia conducted the second "easy" phase of import substitution, which involved deepening the industrial structure. The government embarked on a state-led program of import substitution involving the establishment of state-owned, upstream, basic industries. However, the government's industrial-deepening plan was "'one massive exercise in import substitution' without any reference to efficiency or exportability considerations" [Gray, 1982, p. 42; quoted in Thee, 2002, p. 222; see also Wihardja and Negara, 2015]. And moreover, this industrial strategy was strongly supported "by the military/bureaucratic network whose economic fortunes are being (or have prospects of being) advanced by the establishment and operation of large state enterprises" [Gray, 1982, p. 49]. Indonesia also imposed mandatory "deletion programs," under which producers were required to use more of locally made parts and components as intermediates. This hurt export-oriented firms, which required high-quality parts and components. This deletion program has never been successful. Indonesia still relies on imported parts and components until today [Wihardja and Negara, 2015].

After a decade of booms in the 1970s, Indonesia soon found itself running out of oil revenues with oil prices dropping twice in 1982 and 1986. To move the economy away from its dependence on oil exports, Indonesia shifted from import substitution to an export-oriented industrial strategy. Not until 1986, when oil prices fell more steeply than in 1982, did the government really push through trade reforms toward export promotions. This resulted in an anti-export bias, which provided exporters with the opportunity to purchase inputs from foreign and domestic suppliers at international prices. The government also adopted an active exchange rate policy to support the growth of non-oil exports by ensuring that the real effective exchange rate remained competitive. The government introduced a new tax law in response to the falling government revenues by increasing non-oil taxes, particularly personal and corporate income taxes, imposing a new value-added tax and pursuing a tight fiscal policy [Thee, 2008]. The banking sector was deregulated to allow state-owned banks to set their interest rates, and credit ceilings were lifted. To move away from high dependence on oil and gas exports, the government also introduced deregulation measures to improve the investment climate for both domestic and foreign investors by dismantling the complex regulatory framework [Thee, 2008]. In addition to making trade reforms, the government deregulated foreign direct investment (FDI), by removing restrictions that had been reintroduced in 1974. The most significant liberalization of FDI was in 1994.

The 1983 reform package succeeded in countering the post-oil boom shocks. Most of the credits went to the influential economic technocrats advising Soeharto. By the 1990s, the economy was able to diversify away from oil and gas (see Table 2). The surge of export-oriented investment by newly industrialized economies (NIEs), such as Korea, Japan, Taiwan, Hong Kong and Singapore, was a result of both the pull and push factors. The pull factors included all the abovementioned trade and investment reforms; the push factors included the substantial appreciation of the NIE currencies and a rapid rise in wages in NIEs, Taiwan's abolition of foreign exchange control in 1986, Korea's support to Korean private firms to invest in South East Asia, and Singapore's development of Batam as an industrial estate to which its labour-intensive industries could relocate [Thee, 2008].

In the 1990s, Indonesia was able to industrialize by growing its manufactured exports rapidly. Manufactured exports were not yet dominated by China. Indonesia was also a large labour-surplus economy, attracting labour-intensive industries. Another factor in its relatively smooth acceleration was that the production network was less fragmented than it is now, so In-

donesia's manufacturing added value as a percentage of gross domestic product (GDP) reached 25% in 1996 and manufactured exports as a percentage of total exports reached 51% that same year (see Table 2).

Table 2: Indonesia's Comparative Industrial Growth, 1965–96

	Manufacturing added-value (millions of US$)		**Manufacturing added-value as % of GDP**		**Manufactured exports as % of total exports**	
	1970	1996	1965	1996	1965	1996
Indonesia	994	58.244	8	25	4	51
Malaysia	500	34.030	9	34	6	76
Philippines	1.622	18.908	20	23	6	84
Thailand	1.130	51.525	14	29	3	73

Source: Thee [2008].

The 2001–12 Period of High Commodity Prices

After the successful economic reforms in the late 1980s and early 1990s, external events and internal political developments caused setbacks, leading to political, social and economic instability in the Asian financial crisis 1997–98. Pervasive corruption, cronyism and collusion that stood alongside the financial liberalization that was introduced "without preparedness of institution," brought political and social disorder triggered by the massive rupiah devaluation and the eventual collapse of the banking sector, followed by the collapse of the real sector [Pangestu, 2015]. By 1999, political order was restored within a new framework of electoral democracy. By that time, the international economic environment had changed fundamentally. China has begun an unprecedented rate of economic growth due to its economic opening to the global market. Manufactured exports in labour-intensive industries were dominated to a large extent by China. Double-digit growth in China and India were also fuelling global demands for resources-based products with an impact on international prices for resource-based products. China's competitiveness in the low-end manufacturing sector combined with skyrocketing commodity prices reversed Indonesia's competitive advantage in international trade back toward resource-based commodities [Garnaut, 2015]. The 1997–98 Asian financial crisis also hurt the manufacturing sector, which had been growing from pre-crisis double-digit growth to a low single-digit growth after. High import-content manufacturing firms collapsed due to significantly devaluating rupiah combined with a significant drop in Indonesians' purchasing power and a collapsing banking sector.

But, soon after the Asian financial crisis, which saw Indonesia's Soeharto step down after 32 years of leadership, prices for palm oil and coal skyrocketed except during the global financial crisis of 2007–08 (see Figure 1). Combined with licence issuances by regional governments for extractive activities in the decentralized post-Soeharto era and a shift from contract-based to licence-based system in the mining sector, palm oil and coal activities proliferated and became the main drivers of Indonesia's export growth during the commodity boom of 2001–12.

Indonesia's share of manufactured product exports also declined significantly as a result of the shift from a manufacturing-based economy to a resource-based economy during the commodity boom, particularly in mining and agricultural products dominated by coal and palm oil (see Figure 2). By 2014, palm oil and coal exports topped the list of export value share,

which made up about 20% of total export value (see Table 3). In 2000, crude oil, petroleum and gas topped the list of export value share. Indonesia's successful diversification in the post-oil boom away from oil and gas toward more manufactured products was also reversed. With the commodity boom, the relevance of the manufacturing and processed commodity sector in exports declined with regard to raw commodities; the export of high-technology goods also declined after the early 2000s [World Bank, 2014b]. Breaking down manufacturing exports into processed commodities and other manufacturing products reveals the diminished relevance of the manufacturing sector, especially non-processed-commodity manufacturing products, in the export market during the commodity boom (see Figure 3). Indonesia's export shares to China, its second biggest market, have increased in mining and minerals as well as in agricultural products (see Figure 4).

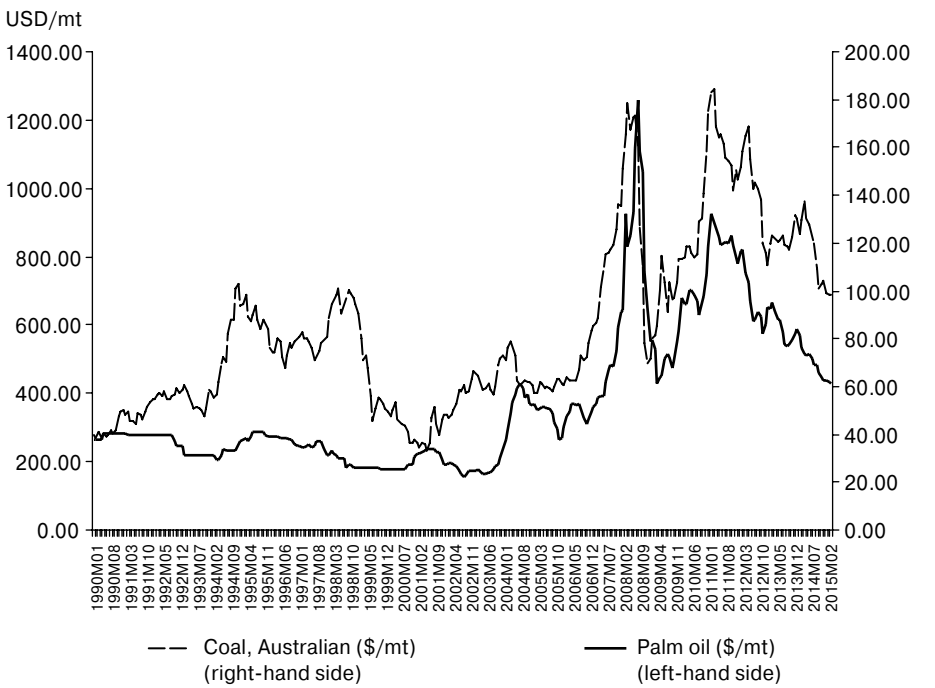

Figure 1: Coal and Palm Oil Prices (U.S. dollars/metric ton), 1999 – February 2015

Note: mt = metric ton.

Source: World Bank Databank [2016].

It was never obvious whether the commodity boom would ever end, and if it would, when. The supply of some commodities that Indonesia relied on for export, for instance tree crops such as palm oil, was very inelastic, but their abundant supply weakened the price once demand decreased. It was also never predicted that two of Indonesia's biggest importers of palm oil, for example, namely China and India, would see much weaker growth. China's structural reform resulted in a sharp decline in its growth and India's growth was halved in the past few years. Other vegetable oils such as soybean oil serve as perfect substitutes to palm oil, so a relative decline in the price of these substitutes also lowers demand for palm oil and, eventually, the price of palm oil.

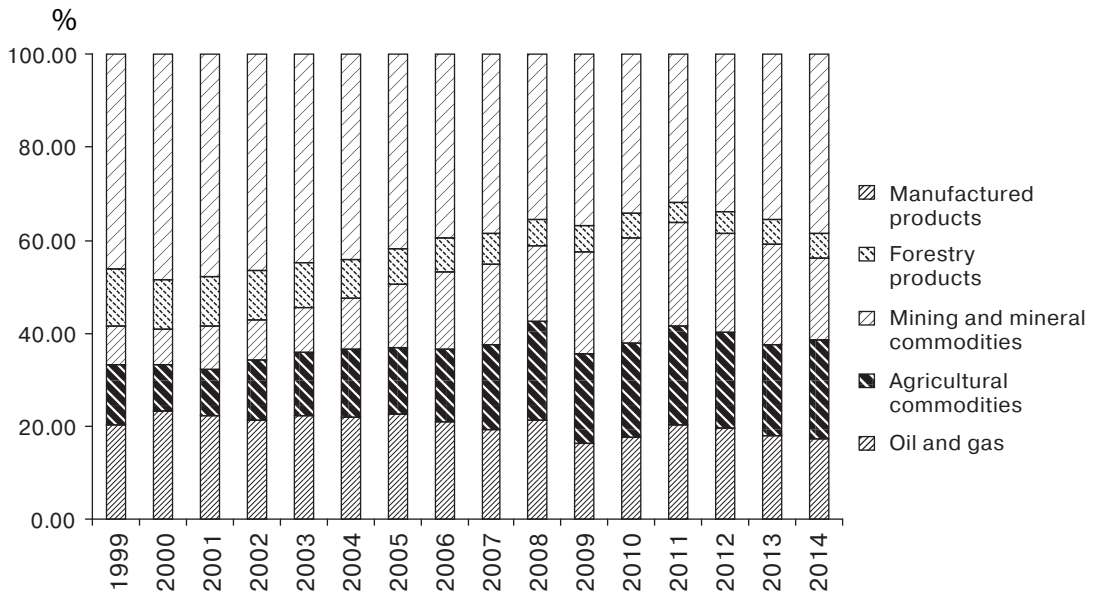

Figure 2: Export Shares (%), 1999–2014

Source: National Bureau of Statistics and World Bank staff calculations.

Table 3: Top Ten Commodity Groups by Export Share (%), 2014 and 2000

Commodity groups	**% in 2014**	**Commodity groups**	**% in 2000**
Coal	11.82	Gas	10.66
Palm oil	9.91	Crude oil/ petroleum	9.80
Gas	9.75	Garments	7.62
Chemical materials	6.84	Chemical materials	4.53
Crude oil / petroleum	5.40	Electronic parts	4.28
Garments	4.40	Plywood	3.74
Other manufactured products	3.41	Computers, auto data process	3.71
Transport equipment	3.06	Paper and paper products	3.64
Rubber	2.73	Video and audio recorder	3.51
Electronic parts	2.44	Textile fabric	3.51
Total % of top 10	59.76	Total % of top 10	55.01

Note: Bold indicates raw commodity exports.

Source: National Bureau of Statistics and World Bank staff calculations.

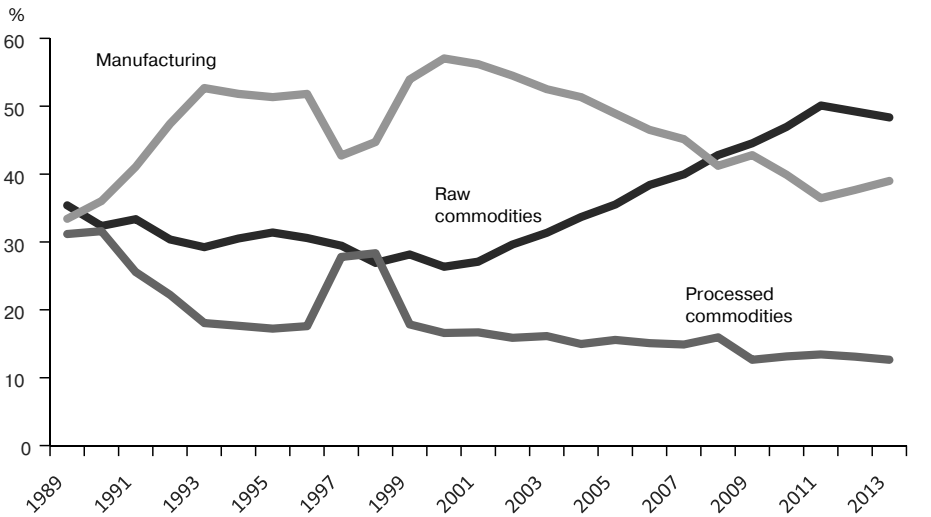

Figure 3: Export Shares (%), 1989–2013

Source: World Bank [2014b].

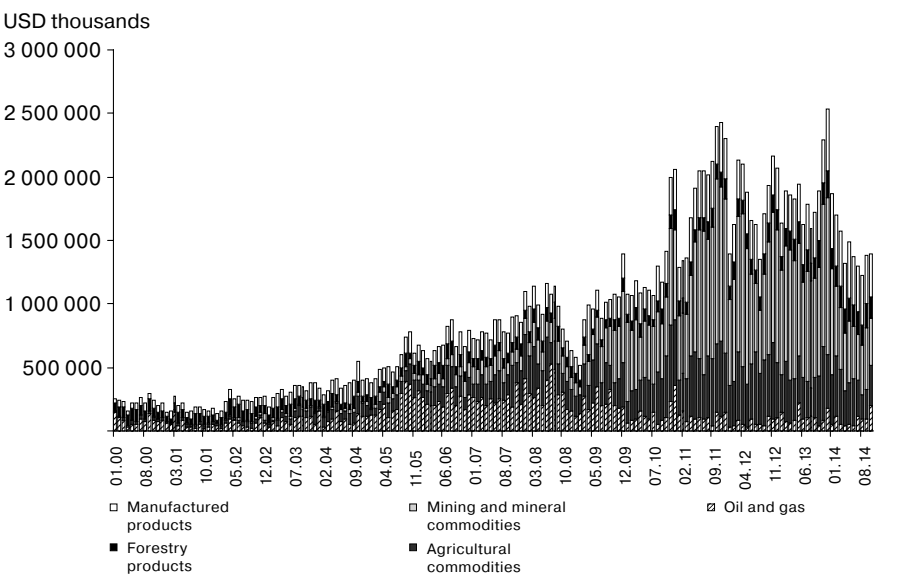

Figure 4: Indonesia's Exports to China, January 2000–October 2014 (US dollars, thousands)

Source: World Bank staff calculations.

The Effect of the Commodity Boom on Macroeconomic Fundamentals

Indonesia's strong growth during the commodity boom, averaging around 6%, was fuelled mostly by strong domestic consumption, investment and net export (see Figure 5). Persistently rising commodity prices in 2003–07 and 2009–10 were major determinants of Indonesia's strong export growth, resulting in higher corporate profits, household incomes and govern-

ment revenues, which in turn boosted domestic consumption along with domestic output and imports [World Bank, 2015]. Combined with Indonesia's young population, this translated into Indonesia's rising middle class.

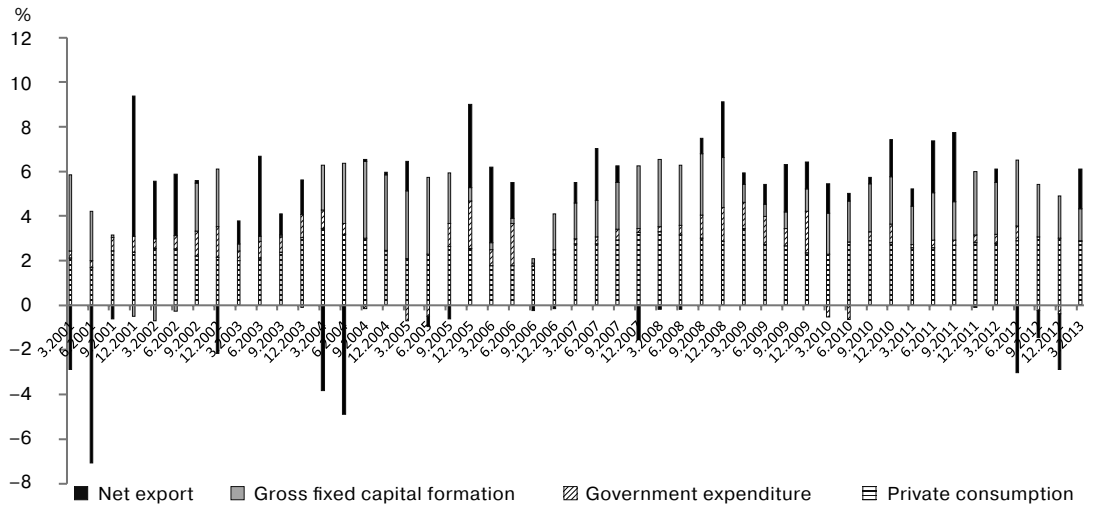

Figure 5: Contributors to Growth (%) (2001–2012)

Source: CEIC Data, author's calculation.

Meanwhile, a significant increase in investment had gone mostly to the mining and construction sectors, which translated into high returns on property equity market indexes in the period of 2001 until 2010 (see Figure 6). In addition, a strong portfolio investment was driven to some extent by two factors. The first was Indonesia's relatively high interest rates compared to its neighbouring countries (6.4% average from 2009 to 2012), with a reasonable level of inflation (5% average from 2009 to 2012). The second was the "easy money" period with global injections of liquidity, some going into Indonesia's investment after the global financial crisis, as well as Indonesia's perceived political stability.

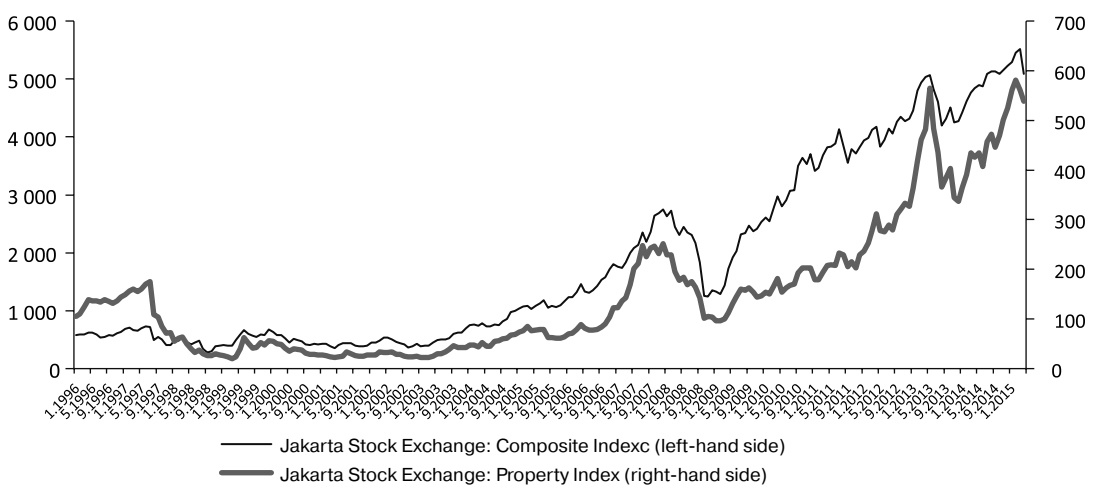

Figure 6: Equity Market Price Index, January 1996–January 2015

Source: CEIC Data.

All macroeconomic indicators show strengthening macroeconomic fundamental during the boom period, with the exception of 2008: improving the trade balance (see Figure 7), a balance-of-payment surplus (see Figure 8), rupiah appreciation and growing international reserves (see Figure 9), and loose monetary policy to support pro-growth policy (see Figure 10).

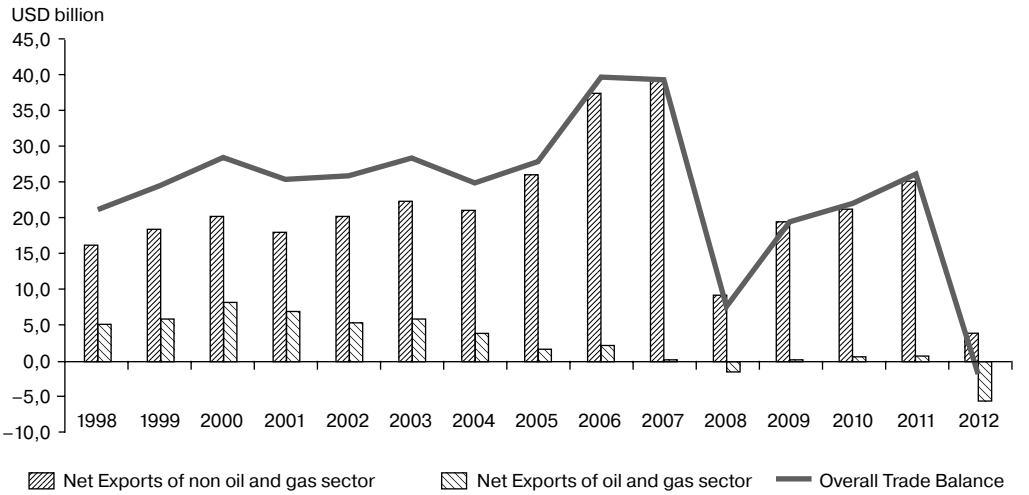

Figure 7: Indonesia's Annual Trade Balance (U.S. dollars, billion), 1998–2012

Source: Siregar, Wihardja [2015].

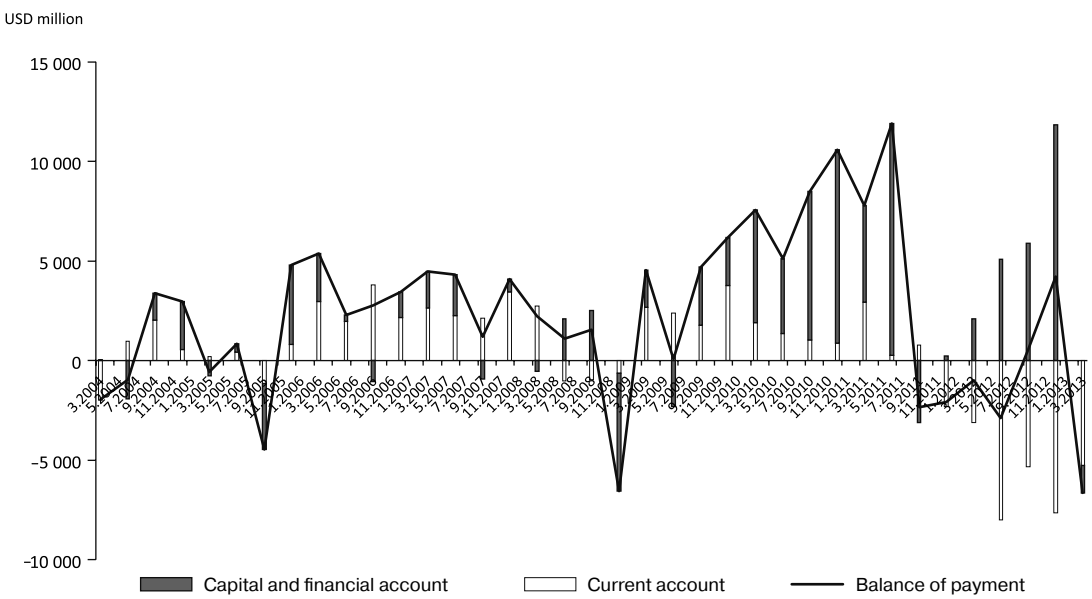

Figure 8: Balance of Payments (U.S. dollars, million), Third Quarter 2007–Third Quarter 2013

Source: CEIC Data.

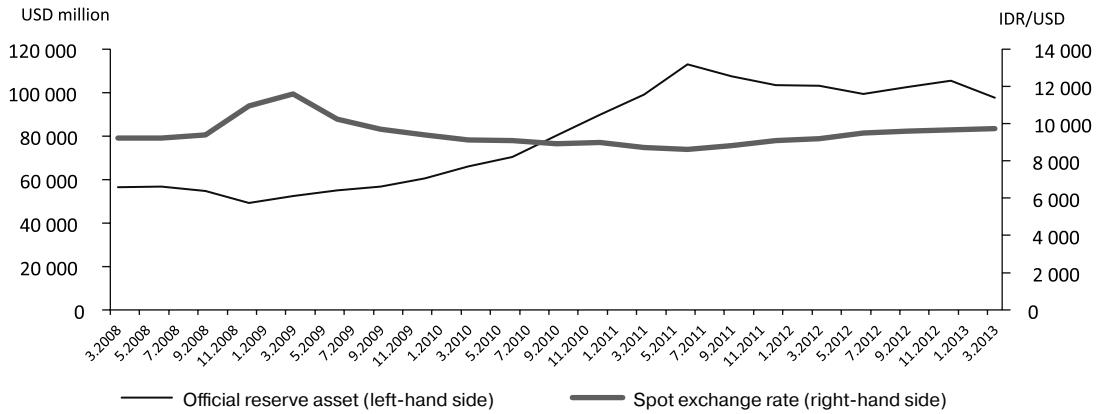

Figure 9: Spot Exchange Rate and International Reserves, January 2008 – April 2013

Note: USD = U.S. dollars.

Source: CEIC Data.

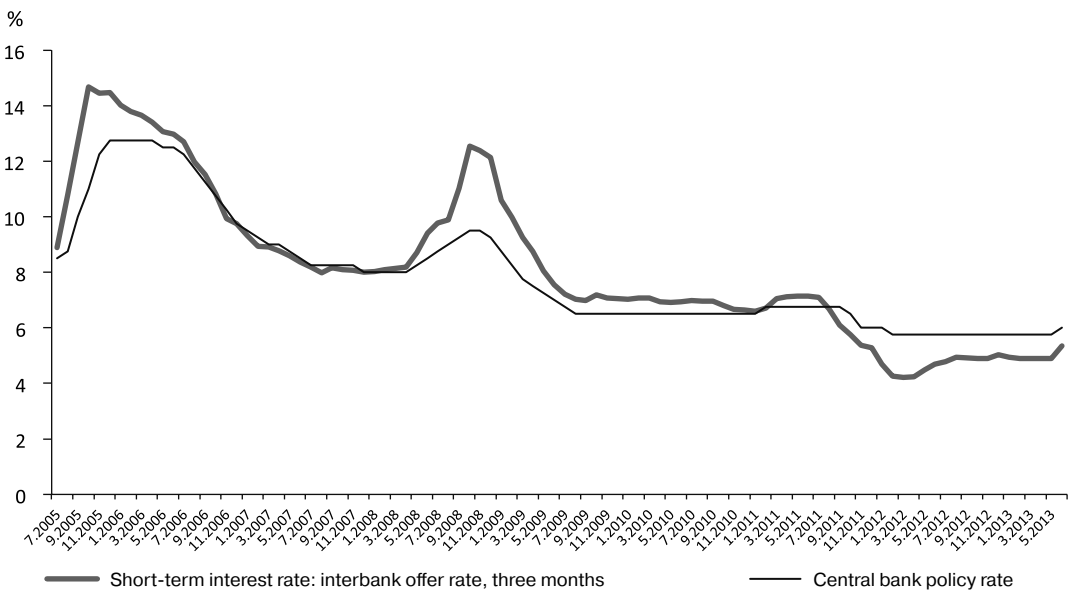

Figure 10: Short-Term Interest Rates and Policy Rates (%), July 2005 – April 2013

Source: CEIC Data.

Despite strong growth and macroeconomic fundamentals, it is nonetheless difficult to say that the revenues from the commodity boom were used to rebuild Indonesia's competitiveness in the manufacturing sector or to promote its further industrial development after the Asian financial crisis of 1997–98.

One obvious impediment to Indonesia's reform efforts is the country's fiscal spending structure, with about one third of the government's budget going into poorly targeted energy subsidies by 2013. Such a spending structure combined with inadequate discipline by local governments to use their own budgets to invest productively (instead of allocating high proportions

of their budgets to personnel) limited the fiscal room to build more competitive industries, in particular through physical infrastructure development and human resources, as well as to diversify away from its reliance on and vulnerability to external shocks. The Indonesian population was becoming very consumptive.

However, soon after the commodity boom ended, macroeconomic fundamentals deteriorated. By 2012, Indonesia had a trade deficit for the first time since before the Asian financial crisis. By the second quarter of 2014, current account deficit to GDP ratio was about 4.3%. With a growing consuming class, demand for imported goods and services was high. But domestic supply was not fast enough to respond. The slow structural transformation with a high reliance on commodity exports during the commodity boom meant that exports were weakened when the boom ended at the end of 2011. Meanwhile, manufacturing and services exports could not compensate for the weak commodity exports nor did the depreciating rupiah help much.

By 2013, the capital account had weakened and the balance of payments was in a deficit. International reserves were declining and the rupiah was still depreciating against the U.S. dollar. By the end of September 2014, the rupiah had depreciated to 12,100 rupiah to the dollar, passing the psychological barrier of 12,000 rupiah. By 2014, monetary policy was tightened by 5.75% at the end of 2012 to 7.5% by October 2015. Monetary policy switched from the pro-growth policy to a pro-stability one, despite declining inflation. By July 2014, the government had revised its 2014 budget to include cutting the budget for line ministries by 43 trillion rupiah [World Bank, 2014a].

The Effect of Commodity Boom on Industrial Development

During the commodity boom, Indonesia's experienced a mini Dutch disease, where high commodity earnings drive the exchange rate to the point that manufacturing becomes internationally uncompetitive. Indonesia's real effective exchange rate appreciated by almost 24 percent between early 2000 and 2012 [Nehru, 2012]. That had an impact on the growth of the tradable sectors in Indonesia, including export of manufactured products. The role of the manufacturing sector had significantly declined in all dimensions, including value-added, share of exports and share of employment, since the Asian financial crisis. Moreover, there were some indications that policies were becoming protective in response to the stronger rupiah [Nehru, 2012].

The manufacturing sector lost international competitiveness not only because of the strong rupiah, but also of many other factors: poor infrastructure, land acquisition issues, high export–import and inter-island logistics costs, regulatory complexity, rigid labour laws, and a lack of skilled human resources. Their impact can be observed by indicators such as the Logistics Performance Index, the Ease of Doing Business, and so on. Growth during the commodity boom was driven by mostly commodities and low-productivity services, which affected job creation, labour productivity and the share of labour income. There was no significant real reform to improve the situation in order to boost Indonesia's competitiveness in manufacturing and all other sectors more generally during the era of high commodity prices.

By the time the commodity boom ended in 2012, there was a sense of panic as commodities could no longer be expected to drive strong economic growth while the annual trade balance went into deficit for the first time since 1998. The current account showed a significant reversal in 2012, starting from a small surplus in 2011 into a deficit of 2.7% of GDP in 2012. Through mid-2012 most of the decline originated from a rapidly shrinking non-oil and gas trade surplus, followed by an increased oil deficit.

The trade policy that responded to the end of the commodity boom was clearly different from the response in the 1980s. This time, it was more inward-looking and protective of domes-

tic markets and industries as well as seeking to increase the value-added value of commodities by downstreaming, as clearly reflected in the 2014 Trade Law and Industry Law. According to a senior minister, "with the implementation of the newly approved Industrial Law, Indonesia will have a strong legal base to promote import substitution as well as downstream industries in efforts to reduce the manufacturing sector's heavy reliance on imports of components and machinery" [*Jakarta Post*, 2014]. The trade and industry policies also "fail[ed] to grasp the nature and operation of global value chain and technology acquisition" [Nellor, 2015]. Indonesia's growing middle class was seen as a target by foreign competitors. Some policies were targeted at protecting the huge domestic market: non-tariff barriers to horticulture imports, imports of finished goods, export tax on minerals, and so on [Anas, 2012; Siregar and Wihardja, 2015; Wihardja, 2014]. However, most of these protective policies were the product of rent-seeking activities. These inward-looking policies of the post-commodity boom era reflect the policies during the oil boom more than those of the post-oil boom era.

More recently, the government has also implemented selective interventions by supporting certain industries through fiscal and non-fiscal incentives such as the shipbuilding industry and through increasing local content such as in automotive and telecommunication devices. FDI is becoming more restricted, especially in the extractive sectors.

It is still unclear where Indonesia's structural transformation is heading. Most of the needed reforms are long term in nature and operation but policymakers under the new democratic system are more reactive and short-sighted, without considering any comprehensive cost and benefit analysis. Decision-making is also not as coordinated as it was in the 1980s because the government and parliament are much more divided. This poses a challenge to the investment climate as regulations become more uncertain and inconsistent, especially in extractive industries but also in other sectors including labour-intensive industries.

A case in point is the mineral export ban, which was introduced in 2009 through the Law on Mining of Coal and Minerals (Law 4, 2009). One of the most significant changes was in articles 102–03, which required miners to "increase the value added" by conducting ore processing and refining activities domestically. On 1 January 2014, Indonesia banned exports of raw minerals except coal, although before this ban was implemented there were already high-level talks between the government and some mining companies, especially big mining companies with significant export shares and tax payments, on exemptions. By 2015, the full export ban applied only to nickel and bauxite ore, which the government estimated would have much more value if they are processed.

In times when Indonesia needs to reduce the current account and fiscal deficits, this mineral export ban has proven to be a burden on growth. The contribution of net export growth to year-on-year growth in the first quarter of 2014 declined to −0.1%, compared to the fourth quarter of 2013, when net export growth was the main driver of growth, partly thanks to exuberant exports of raw minerals before the ban took effect [World Bank, 2014a]. The decline in real exports in the first quarter of 2014 was "due to lower coal exports as well as virtual halt in the exports of ores, slags and ashes" [World Bank, 2014a, p. 3]. The mineral export ban hurt not only the current account balance but also the fiscal balance through lower tax revenues from mineral exports and employment due to the closing down of some mining companies and lower outputs.

Clearly, the past decade of high commodity prices posed challenges in terms of industrial development. Ian Coxhead and Muqun Li [2008] argue that Indonesia's resource wealth diminishes the share of skill-intensive products in total exports, while FDI and human capital increase it. These in turn impede diversification in production and trade, while diversification would have reduced Indonesia's vulnerability from external shocks.

The challenge to reform is greater now than it was in the 1980s because the global economic landscape is different. First, profitability in the financial sector is higher than in the real sector, attracting more financial investment than investment in the real sector. Second, production is much more fragmented, and hence the manufacturing share to GDP in economies that are still industrializing may not need to be as high as it was in the 1980s. This is probably why deindustrialization happens at a lower level of development now than in the 1980s [Rodrik, 2015]. Also, specialization is the rule, and the role of imported intermediaries in production is increasingly important. Third, although there is no evidence that there is a massive replacement of workers by machines in Indonesia, theoretically, as argued in Schumpeter's theory of creative destruction, job destruction may occur with new technological adoption. This poses new challenges to Indonesia's structural transformation today.

Achieving Sustainable Development after the Commodity Boom

The end of commodity boom should not be the end of Indonesia's strong and sustainable growth and development. It is a critical time to reverse the cost of the boom through coordinated policies. The domestic political landscape and global economic landscape are very different from in the 1980s, so Indonesia's strategies must also be different, although the basic principles of good policies must still hold, such that they must be coordinated and have a long-term vision. Sustainability implicitly means a long-term prospect to begin with.

Indonesia's experience as a natural-resource rich country is not unlike what many other countries rich in natural resources experience:

- Dutch disease, crowding out of non-commodity and tradable sectors, deindustrialization;
- A protectionist trade regime trying to protect non-booming tradable sectors;
- Fiscal and administrative inefficiency, including diminished capability to raise taxes and translate resource revenues into economic development;
- Poor performance in alleviating poverty and reducing income inequality;
- Slow skill accumulation;
- Corruption, rent seeking; and
- Environmental damages [ODI, 2006].

What can Indonesia do to manage the risks of the resource curse and realize "resource blessings"?

First, Indonesia should have a countercyclical fiscal policy with respect to commodity booms [Garnaut, 2015]. This could be in the form of "a commodity fund that collects the royalties and other tax earnings denominated in foreign exchange, invest these conservatively in financial assets, and use the long-term real earnings to finance development projects on a sustainable basis" [Nehru, 2012]. Volatility in commodity prices could also be mitigated through hedging mechanisms, which needs to be further explored.

There is a wide range of international experiences in establishing commodity fund, whether for managing revenue volatility, stabilization, sterilization, savings, investments or some combination of these [ODI, 2006]. The central question of how to spend and save a commodity windfall is to avoid adverse outcomes such as "stop-go" public spending, unsustainable "boom-based" foreign borrowing, a shift to consumption rather than productive investment, exchange rate appreciation, disincentives to private sector investment, intergenerational inequality, and short- and medium-term fiscal budget volatility, as well as the experiences listed above [ODI, 2006]. However, each country needs to adjust the design and implementation of such a fund based on its domestic specificity, for example balancing foregone expenditure for the purpose of

long-term intergenerational equity with the returns of more immediate productive investment, poverty reduction. Norway has a large sovereign wealth fund accumulated from its oil and gas revenues, and successfully it "is happy to save its wealth" [Treanor, 2014]. Only 4% of the surplus from the fund is spent on or invested in public projects. Norway also has plans for when its oil and gas reserves run out. The population's high level of trust that the government will spend tax money wisely is key for the system to work. Indonesia needs to design and implement a commodity fund most appropriate for its own domestic specificity.

Second, revenue and fund management should also be accompanied by forward planning and policy sequencing. For example, Kazakhstan, East Timor and São Tomé as well as some established oil economies have passed revenue management laws, sensitized their citizens to the risk of commodity booms and conducted public consultations on how to manage revenues to maximize social welfare [ODI, 2006]. Countries that have managed their commodity revenues well, such as Norway, the United Kingdom and Chile, have adopted strategies and economic policies that fit with the evolution of the extractive sector. For example, during the investment phase, policies may include adapting a production-sharing model and establishing royalties and tax regimes appropriate for local circumstances. As the sector develops, efforts can focus on medium- and long-term fiscal stabilization, and investment revenues can support competitiveness in other tradable sectors. Good governance including transparency, accountability and public participation is key to the success of all such programs.

Third, Indonesia should reindustrialize by promoting investment in labour-intensive industries to create jobs as well as in high-tech or capital-intensive industries to move to higher value-added and high-productivity manufacturing sectors. Currently labour-intensive industries are more likely, but Indonesia should be prepared for capital-intensive ones. China, for example, is now developing a higher value-added manufacturing sector after a successful phase of labour-intensive industrialization. "The manufacturing sector is both an important source of quality jobs in its own right, a major source of their merchandise exports and as a catalyst for the development of the services sector" [Thee, unpublished].

Indonesia should take advantage of businesses considering relocating factories in China because of the soaring prices for land, water, and labour as well as increasingly severe environmental constraints. Tapping this opportunity by setting the right policy is important. The Japan Bank for International Cooperation 2014 survey on Japanese manufacturers' overseas operations shows that Japanese businesses placed Indonesia among the top investment destinations, competing with China. In order to do this, Indonesia must seriously reform its labour market and land acquisition process, reduce regulatory complexity and resolve uncertainties as well as improve its legal, judicial and enforcement institutions such as eradicating corruption and strengthening enforcement.

Fourth, Indonesia also needs to increase productivity in its agricultural sector beyond the palm oil industry. Indonesia's structural transformation will only be complete if it includes small farmers, fishers and so on. Its rich natural resources should be a blessing to all Indonesians and not only a few. However, the windfall from higher commodity prices accrued to a few and posed a threat to the country's industrialization and structural transformation that would have benefited more Indonesians. Competition for agricultural land and forest areas should be handled with transparency to minimize economic rent-seeking activities, especially because, in most cases, smallholders have less political power than capitalists. Protecting the indigenous population should be part of inclusive growth. Resource contracts must also be depoliticized [Pardede, 2015].

Fifth, Indonesia should also tap the potential in its services sectors including the tourism and creative industries. This will help to ease pressures on relying solely on growth in the manufacturing industry to create jobs and generate external financing.

Sixth, resource management policies should also include stronger environmental regulations. Environmental costs should be factored into resource contracts. Costs should be fair and balanced so that the incentives to industrialize would be sufficiently strong vis-à-vis investment in resource sector. Labour and capital should also be taxed in a fair and balanced way so that they can be allocated more efficiently.

Forest fires cannot continue to be "permitted" because the environmental damage to health and the ecosystem are immeasurable. Good governance needs to be strictly upheld. An international standard for verifying sustainable palm oil production may be needed so that only those products that meet the standard can be exported.

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China in Global Energy Governance: A Chinese Perspective

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China retains a bilateral and regional cooperation approach or a geopolitical strategy to secure its energy security, while it seeks to embrace global energy governance and more actively participate in global climate change negotiations. It has also been focusing on developing clean and renewable energy since early in the 21st century. China's new Belt and Road initiative contributes to a 2.0 version of its current geopolitical strategy to secure its energy supply. Although China's emphasis on energy security still corresponds to its geopolitical strategy, its weak participation in global energy governance is due to the fragmented global energy governance system that it sees as neither authoritative nor credible, as well as to the lack of willingness or impetus for its own domestic energy institutions to join the system. Taking into account the difficulties and potential of current global energy governance, this article suggests it is reasonable to seek a limited goal for coordinating regimes instead of creating coercive institutions in this field. Attainable goals in the near future should focus on promoting a transparent international market and establishing data-sharing mechanisms between governments and energy intergovernmental organizations and between producers and consumers. There should be emphasis on climate change and clean energy governance under the United Nations Framework Convention on Climate Change (UNFCCC). The Group of 20 (G20) of should play an increasingly significant role in global energy governance. China, with its positive attitude and active participation in the G20 and as host of the G20 summit in 2016, should participate more actively, perhaps even playing a leading role in global energy governance under the G20 framework.

Key words: global energy governance, energy security concept, G20, renewable energy, climate change, Belt and Road initiative

Introduction

China began to engage and cooperate with international energy organizations in the late 1990s and early 2000s. To date, it has joined several global and regional energy-governing regimes including the International Energy Forum (IEF), the Clean Energy Ministerial and the International Renewable Energy Agency (IRENA), but remains outside several major global energy-governing regimes, including the International Energy Agency (IEA), the Organization of Petroleum Exporting Countries (OPEC) and the Energy Charter Treaty, although it has established cooperation relations with each to varying degrees.

These developments in China's participation in global energy governance, however, have received little attention both in public and from academia in China. With its increasing reliance on imported oil and gas since the 1990s, China has taken a geopolitical approach to guaranteeing its energy supply security. The official line of "active participation in international energy cooperation" in reality meant bilateral cooperation and China chose to ensure its overseas energy supply through bilateral energy cooperation, underlining the "going out" strategy and

building overseas routes for importing oil and gas.[1] This strategy was mostly implemented in Africa, the Middle East, Latin America and other places. Three land-based oil and gas pipelines were built to transport oil and gas back to China, with more built as important complements to sea routes.[2] The New Silk Road Economic Belt and the Silk Road Maritime Belt, also known as the Belt and Road initiative, were finalized in 2014 and are being carried out as a grand national strategy. Energy resources constitute a significant component, given both the overlap between the Belt and Road routes and China's major oil and gas importing routes and the fact that the Silk Road Economic Belt connects Russia and some major oil and gas producers in the Middle East and Central Asia. The Belt and Road initiative is a strengthened version of China's bilateral cooperation for energy security and is being pushed strenuously.

Voices for China's more active participation in global energy governance have risen along with the country's deeper involvement in the international oil and gas market since the mid 2000s. Some scholars have argued that further participation in global energy governance could facilitate international energy cooperation and contribute to stabilizing the international energy prices, eventually benefiting China's supply security [Guan and He, 2007; Xu, 2013; Yu, 2013]. It could also allow China to acquire the rule-making power in international energy organizations.

This article explores China's participation in international energy cooperation since it became a net oil importer in 1993. It argues that China still retains a bilateral and regional cooperation approach, while developing closer cooperation with existing major global energy-governing institutions. One argument for China's embrace of those institutions is that they support its efforts to mitigate domestic air pollution, which contribute to its goals of clean energy development and climate change control in global energy governance system. Chinese academic circles constitute the main advocates for more positive participation in global energy governance. This article suggests that the Group of 20, which provides a significant institutional arrangement for coordinating major powers' governance of international energy markets and climate change, could be the appropriate platform for China to play a more active role to its growing prominence in the G20.

This article begins by discussing China's traditional geopolitical approach to energy security and then examining its new concept of energy security, illustrated by China's policy evolving to embrace global energy governance and its increasingly positive policies and practices on climate change. The second part examines China's current participation in international energy organizations, highlighting the constraints facing China's participation in global energy governance. Because global energy governance is fragmented and lacks authorities, in the third and fourth parts the article observes that perhaps China should pursue limited goals focused on improving global transparency and sharing data and coordinating efforts for clean energy and climate change governance, instead of seeking comprehensive, cohesive institutions to govern global energy markets in the near future. It suggests that the G20 would be the appropriate institution to pursue such limited goals. The fifth part examines the possible advantages of China participating in global energy governance under the G20 framework, followed by a concluding section.

[1] It initially refers to Chinese national oil companies' pursuit of overseas oil in 1990s, which focused on purchasing foreign oil assets and equity. Intended to encourage China's enterprises to invest abroad, it was consolidated and formalized as a national grand strategy in the 10th Five-Year Plan (2001–05) in October 2000.

[2] The existing pipelines are Northeast (China – Russia) Pipeline, the Northwest (Central Asia) Pipeline and the Southwest (China – Myanmar) Pipeline.

Embracing Global Governance: China's New Concept of Energy Security

China's Traditional Energy Security Concept and Practices

In general, China's concept of energy security is endowed with excessive geopolitical or geostrategic considerations. Its policy orients toward national security rather than the international energy market. China enhances its self-sufficient energy supply as much as possible by establishing more land routes for transporting overseas oil and natural gas into China and avoiding chokepoints like the Strait of Malacca. The going-out strategy was created so China could acquire more overseas energy resources. It reflects a belief that oil produced by Chinese companies abroad is a more secure source than oil purchased on international markets, so by doing so China could realize energy supply security.

Driven by insecurity in energy supply, policies to control production and transportation routes are still the first choice for Chinese elites and leaders, judging from the Belt and Road strategy and China's consistent endeavours to sign more bilateral energy supply agreements and build more land-based routes in the recent decade. The Energy Development Strategic Plan of Action (2014–20) released in November 2014 provides some perspective [Xinhua, 2014; State Council, 2014]. As far as international cooperation is concerned, the strategy focuses on the mid-term overseas energy goal to prioritize investment and trade, as well as on building and maintaining sea and land-based routes to transport energy sources back to China. It also underlines the need to expand energy import paths, especially the Belt and Road initiative, the Bangladesh-China-India-Myanmar economic corridor and the China-Pakistan economic corridor. It mentions fostering energy cooperation with five priority regions: Russia and Central Asia, the Middle East, Africa, the Americas and Asia-Pacific. It continues to encourage enterprises to implement the going-out strategy and promotes formation of regional energy markets. With regard to global energy governance, it simply mentions that China should actively participate in global energy governance [State Council, 2014]. Officials from the National Energy Administration later explained global energy governance in detail. They emphasized encouraging a free, open, orderly, competitive global energy market with effective supervision, collectively maintaining the stability of energy prices and markets, improving energy efficiency, making and perfecting the principles of global energy governance, and forging a new pattern of cooperation between consumer and producer countries [National Energy Administration, 2014]. The strategy contained no specific or meaningful proposals in this respect.

Under the strategy, China's rise as an energy-consuming and -importing power poses challenges to the existing global energy governance system in many aspects. China's tendency to secure its energy needs by signing bilateral production and supply deals undermines the principles of free trade and the generally accepted rules of investment [Goldthau and Witte, 2010]. The unique acquisition activities of Chinese national oil companies (NOCs) are characterized by bid prices that are higher than market prices and promises of large collateral social and economic investments. NOCs draw suspicion and even distrust, because they are considered closely connected to the Communist Party of China (CPC) and their investments serve China's strategic policy more than its resource policy. China's energy security strategy is seen as simply an indispensable component of a broader, grand geopolitical strategy.

Furthermore, the geopolitical energy strategy implies huge economic and political risks. It is always a reasonable and wise decision to diversify overseas energy supply. It should, however, not slide over to the other extreme; to overcome the risk of the Malacca dilemma, China chooses to establish other difficult transport routes to import oil and gas on a whatever-it-takes basis, totally ignoring the economic cost. The political strategy-oriented model of investment

plus a worsening investment environment in the transit countries mean that the Belt and Road strategy could have huge economic risks and could make China suffer great economic losses. Accordingly, investing in energy infrastructure will not likely help improve China's energy supply security.

In practice, however, market rules matter. Chinese NOCs have followed the market rules for participating in international energy markets and do not isolate the equity oil they produce.[3] On the contrary, they sold their equity oil in the international markets to make profit in consideration of the cost of transportation, or price differentials between global and domestic Chinese markets. In 2012, the National Energy Board announced that for the first time more than 90% of China's overseas equity production was sold locally, which contributed to the stability of the global oil market [Wang, 2012]. China's energy security in fact relies heavily on the international oil markets, not the going-out strategy and the so-called strategic oil pipelines and land-based transportation routes. China still maintains its geopolitical strategy. It is building pipelines, roads, railways and ports for acquiring access to oil and gas in energy-rich countries, guaranteed through signed bilateral cooperation agreements. The Belt and Road initiative, from the perspective of energy supply security, contributes to a 2.0 version of China's current geopolitical strategy to secure its energy supply.

A New Concept of Energy Security

Against the background of prevailing traditional geopolitical energy notions, a new concept of China's energy security has been growing gradually since 2006. In general, it proposes embracing global energy governance.

At the outreach session at the St. Petersburg Summit of the Group of Eight (G8) in July 2006, Chinese president Hu Jintao described a new concept of energy security [Xinhua, 2006]. He called for greater international cooperation to increase oil and gas supplies, emphasizing the need for dialogue between main energy exports and consumers. Interestingly, he stressed that efforts should be made collectively to maintain stability in oil-producing regions and ensure security in international energy routes, appealing to less politicization of energy security. He also called on research and development in energy technology.

Hu's new energy security concept was in contrast to his remark on the Malacca dilemma three years earlier.[4] It was the first time a Chinese leader had emphasized international cooperation to solve energy problems. However, it was not an immediate policy change, and China still prefers not to rely so heavily on other countries to secure sea routes for importing oil and gas. Hu's proposal sounded like self-serving propaganda and lacked specific measures. Nevertheless, it still symbolized the beginning of a new energy security concept emerging in China.

In July 2011, Zeng Peiyan, chair of the China Centre for International Economic Exchange and the former vice-premier, proposed constructing a global stabilizing mechanism for energy resource markets under the G20 framework at the Energy, Resources and Sustainable Development Conference in Perth, Australia, as part of Boao Forum for Asia.

In line with the principle of mutual benefit agreed at the fifth World Future Energy Summit in Abu Dhabi, in April 2012 Chinese premier Wen Jiabao advocated establishing a mechanism for governing global energy markets comprising the largest G20 energy produc-

[3] Equity oil is the proportion of production that a concession owner has the legal and contractual right to retain.

[4] At a central economic work conference in late 2003, Hu Jintao reportedly expressed concern about the security of China's oil imports [Shi, 2004]. Oil imports seriously risked being cut off at the chokepoint of the Strait of Malacca, reflecting China's traditional conception of the energy security challenge.

ers and consumers. Under such a framework, China hoped that fair, reasonable and binding international rules could be developed and early warning mechanisms, price coordination, financial supervision and emergency mechanisms could be built through consultation and dialogue.

This was the first specific proposal from Chinese leaders on global energy governance. It took a clear stand on building a mechanism for global energy market governance under the framework of the G20. It reflected China's willingness to participate in global economic governance, as mentioned at the Fifth Plenum of the CPC's 17th congress.

Since 2007, an increasing number of academic voices have questioned the traditional concept of energy security. Zhao Hongtu [2007] and Zhang Zhongxiang [2012] have argued that the real risks of the Strait of Malacca and other routes mainly come from pirates, terrorism and maritime accidents during peace time, not a U.S.-led oil blockade, which is highly improbable, either politically or technologically. In 2013, Zha Daojiong, an energy expert from Beijing University, and He Fan from the Institute of World Economics and Politics at the Chinese Academy of Social Sciences, once again questioned the Malacca dilemma as a fake one [Lian, 2013].

At the same time, scholars of China's traditional energy security also began to suggest that China should positively participate in global energy security cooperation and diversify its energy supply sources [Yang, 2009]. In 2013, Wu Lei [2013] called on policymakers to end the debate on whether China should participate in IEA and global energy security governance and instead "pursue such policies."

After Wen's speech in 2012, scholars from the State Council and the National Development and Reform Commission (NDRC) published research proposals on how China should participate in the global energy governance mechanism, especially under the framework of the G20. A State Council research team also published a report on "Building Global Governance Institutions on Bulk Commodity of Energy Resources," which argued that the G20's power structure and status as the premier institutional anchor in global governance create cost advantages so it could engage in the global governance of energy resource markets [Fan, Wang, Zeng et al., 2012].

In February 2014, the NDRC's Energy Research Institute [2014] and the Grantham Institute for Climate Change at Imperial College London released a joint consultation report on "Global Energy Governance Reform and China's Participation." It suggested a greater role for the G20 in providing leadership on energy governance reform, possibly through a new working group, and strengthening the G20's role as an important and representative platform for G20 leaders to discuss energy issues. It made several recommendations on how China can build capacity for participating in global energy governance and pursue more internationally minded energy policies. The report makes an effort to explain Chinese energy policies to the international community so they can be fully understood. NDRC's research team consists of retired or former high-level officials and scholars inside the system. The report further demonstrates positive movements in China's policy on global energy governance.

This transition in the concept of energy security suggests a lot for China's participation in global energy governance. The two key developments – Hu's 2006 energy security concept and Wen's 2012 proposal for a mechanism for governing global energy markets – involve China's participation in the G8 (or Group of Seven [G7]) and G20 respectively. This is no coincidence. China's closer engagement with the G-x shows its increasingly positive attitude to engaging in global governance.

China's Efforts on Clean Energy and Climate Change

China's increasingly positive efforts to promote clean energy and control climate change coincide with the emergence and development of its new energy concept. They also constitute aspects of China's gradual economic transition, which started around the mid 2000s. Continuous high-speed economic growth, involving large volumes of fossil fuels used inefficiently and a particularly high reliance on coal, put China under growing pressure to address environment protection and climate change both domestically and internationally. Becoming the world's biggest emitter of greenhouse gases in 2006 brought even more pressure on China. These factors pushed China to seek more flexible and pragmatic ways to deal with climate change. It showed a more positive attitude on some key issues and more enthusiasm on clean and renewable energy development, which it regarded as among the most important and promising prospects for its sustainable economic development in the 21st century [Zhang, 2007].

In its first national plan in 2007, China defined climate change as ultimately a development issue [NDRC, 2007]. Its endeavours to mitigate climate change aimed to maintain sustainable growth and solve the increasingly severe problem of pollution by reducing carbon emissions and encouraging the development of clean and renewable energy. As a result, China is rising as a clean energy superpower and has made progress on hydropower, wind power and solar power.

The Joint U.S.-China Announcement on Climate Change declared at the Asia-Pacific Economic Cooperation summit in Beijing in November 2014 issued a positive signal on climate change [White House, 2014]. It encouraged the rest of the world to take more active measures to address the issue. It augurs well for the future, and for a global deal at United Nations climate talks in Paris in 2015. China's adjustment to emphasize supporting the development of renewable energy could guarantee the realization of the goal declared in the Joint Announcement. This adoption of the so-called new normal – a new growth model that emphasizes economic upgrading and innovation – illustrates that Chinese leaders have accepted relatively slow economic growth. Environmental protection and the growth of renewable energy are regarded as important for China's economic transition and improvement. China is therefore now shifting to a low-carbon economy. In doing so, it could maintain sustainable economic development while also maintaining the legitimacy of the party-state. The level of air pollution, characterized by persistent smog in most parts of the country, and the growing chorus of pervasive complaints, are pushing Chinese leaders to prioritize environmental goals. President Xi Jinping's public response to the so-called APEC Blue at the 2014 APEC summit demonstrated that China's top leader endorses the efforts and measures for environmental protection.[5]

China's Current Participation in Global Energy Governance

A reasonable solution to the challenges facing China's geopolitical approach on energy security is to encourage China to join the existing energy-governing bodies. It has already showed its desire and willingness to do so. At present, China is developing its relationships with almost all the relevant global and regional institutions, but it does not yet have effective or substantial cooperation with the major global institutions. It engages with the IEA, OPEC and the Energy Charter Treaty, which are each treaty-based international energy organizations. Although it has deep and substantial cooperation with regional institutions or organizations such as APEC, the

[5] "APEC Blue" is a sarcastic phrase in Chinese that means something beautiful but short lived. Blue skies are ephemeral in China, especially in Beijing, because of frequent, intense smog. Before the APEC summit in Beijing in 2014, the Chinese government implemented extremely strict measures to control pollution to make sure skies were blue to impress the visiting foreign dignitaries.

Shanghai Cooperation Organisation and the Clean Energy Ministerial, these play a minor role in global energy governance.

One constraint on China's participation in global energy governance is its emphasis on seeking supply security through its geopolitical strategy without paying equal attention to participation in global energy governance. Other constraints are flaws in current global energy governance, such as the fragmentation of the global energy governance system and a lack of implementation capacity [Lesage, 2011; Florini, 2011; Leal-Arcas and Filis, 2013; Baccini, Lenzi and Thurner, 2013]. There are also some restrictive factors, such as the securitization and politicization of states' energy policies and ensuing nationalist energy policies, which make global energy governance less authoritative and less creditable [Mares, 2010; Wilson, 2015]. China is still uncertain whether global energy governance could work effectively and to the benefit of China itself as well as other countries. Yet another constraint is the possibility that domestic oil and gas interest groups would contain China's participation in the global energy governance, which requires more transparency in its own domestic energy governance. This would put China's oil and gas interest groups in a more difficult position to benefit themselves.

Seeking Limited Goals for Global Energy Governance

A fragmentized, less authoritative and less creditable system would demonstrate the great difficulties facing global energy governance. However, market forces and rules matter in the field of international oil and gas, and they provide the basis for global energy governance. Geopolitical and mercantilist frameworks cannot alone explain the fluctuation of global oil markets [Goldthau and Witte, 2010]. Besides, states have demands for effective global energy governance. The information that intergovernmental organizations can provide is usually detailed and highly valuable in the energy market, which is the first reason why states join them [Harks, 2010]. Most countries need redundant and continuous supply networks to guarantee their energy security and reduce costs [Nicolas, 2009]. This reveals the inherent basis and potential of the global energy governance system. In light of both difficulties and possibilities, perhaps it would be reasonable to seek a limited goal for coordinating energy-governing regimes instead of coercive institutions.

First, the big picture of a limited goal is that it is attainable. It should not be a coercive, universally accepted international institution that provides collective energy security to all states in the world, but an international regime to coordinate policy among governments effectively, guarantee a stable energy supply, provide access to energy – especially oil and natural gas – and ensure environmental sustainability. In general, the coordination should include the basic elements of energy governance: measures to correct market failures, to lower transaction costs by promoting transparency and information sharing, to deal with external shocks, to set rules and standards for market exchange, and to promote new multinational infrastructure investment to foster interconnection and security. Specifically, the key question is how to coordinate energy policies made by independent national governments, i.e., interaction between global and national energy-governing bodies, and how to coordinate among the relevant major institutions, for example the IEA, IEF, OPEC, G7 and G20.

In reality, effective coordination still remains difficult in most cases. Although effective coordination among different dimensions and institutions should be the final goal, in the near future the basic and achievable goals should be the promotion of a transparent international market and data-sharing mechanisms between governments and energy intergovernmental organizations and between producers and consumers. The purpose of the coordination mechanism is to reduce uncertainty and lower transaction costs in international energy markets. In terms of enforcement, global energy governance should be built on soft law rules, including

political consensus among state leaders, voluntary commitments, peer pressure and incentive-based implementation.

Second, there should be an emphasis on climate change and clean energy governance. The demand for good governance on climate change, environment protection and renewable energy will provide steady momentum for global energy governance, although it will also bring more complexities. Climate change concerns both producers and consumers and has already developed into a fundamental issue in global energy governance. Less securitization and relatively weaker economic nationalism in the field of climate change and environment protection mitigates the negative influences brought about by the re-emergence of state players in the global governance of climate change.

Unlike the fragmented global governance of oil and gas markets, there is a treaty-based, universal governance regime in climate change governance. The United Nations Framework Convention on Climate Change, with 196 parties, has near universal membership. Its Kyoto Protocol has been ratified by 192 parties.[6] The UNFCCC promotes the global governance of climate change through negotiations and progress has been made since the Kyoto Protocol. The key question that remains is what kinds of international institutions in global governance are needed to implement the goals and frameworks that have been agreed to. In other words, ways to promote the implementation of the low-carbon policies and technologies need to be found. Although some failures happened, including the refusal of Russia, Japan, Canada and New Zealand to commit to the second phase of the Kyoto Protocol at the Doha climate conference in November 2012, the UNFCCC remains the provider of rules on climate change through negotiations. What is more, the joint U.S.-China announcement on climate change in November 2014 offered an incentive for further implementing goals to reduce carbon emissions.

Renewable and clean energy could contribute greatly to the mitigation of climate change and could even be a last-resort solution in the future. It is also a promising industry that could be a driving force for reviving and developing an economy. As far as the global governance of renewable energy is concerned, the main focus should be on promoting development and sharing, and the transfer of clean, renewable and new energy technologies, based on intellectual property protection. Some existing arrangement can be used in this regard such as the negotiations on the World Trade Organization's 2014 Environment Goods Agreement that could be expanded to include the transfer of clean and renewable energy technologies. In that case, the new energy technologies could be used to promote both energy security and the mitigation of climate change.

The G20 and the Limited Goals for Global Energy Governance

The rise of the G20 in global economic governance since the 2008 global financial crisis provides another option for global energy governance. As a global high-end forum and a bridge among big powers, the G20 is often considered an appropriate platform for coordinating action among leading states [Dubash and Florini, 2011]. It is currently the most plausible forum where broad directions for global energy governance could be decided, making it an important arena to watch for the future [Dubash and Florini, 2011]. Three characteristics explain the virtues for the G20 to play an increasing significant role in global energy governance.

First, the G20 provides key political consensus and willingness by issuing public declarations. Its members include the most significant developed and developing economies, accounting for 85% of global gross domestic product.

[6] See "About UNFCCC" at http://newsroom.unfccc.int/about.

Second, flexible institutional arrangements could be another advantage for establishing effective global energy governance under the framework of the G20. Such arrangements involving the International Monetary Fund (IMF), World Bank and the G20 proved to be an effective model for handling the global financial crisis, which provides a possible road map for future institutional cooperation in global energy governance. The institutional cooperation or association between existing main organizations involved in global energy governance, such as the IEA, the IEF and the G20, could be a possible shortcut for a future model. Following the existing successful cooperation model between the IEA and the Group of Seven (G7), together with the fact that the G7 has given way to the G20, the IEA may continue to play a rather unusual direct role of responding to "assigned tasks" by the G20 [Florini, 2011].

Third, G20 members include the most important players in international energy market: the leading energy producers of Saudi Arabia and Russia and the biggest energy consuming powers of China, India and the United States, as well as other G7 members, most of them also big consumers.

The rise of the G20 as a primary forum for global economic governance laid a good foundation for it to play a more significant role in global energy governance. Cooperation between the G20 and major global energy-governing bodies has developed over time. The IEA has played a supporting role since the Pittsburgh Summit in 2009. Since 2011, cooperation to tackle price volatility in international markets for oil, gas and coal has been a priority. Together with the IEF and OPEC, the IEA reported to the G20 on volatility in oil markets in July 2011 and on gas and coal volatility in October 2011. In July 2014, the JODI-Gas World Database was officially launched.

The G20 has the potential to provide leadership at the highest level on energy policy as on other matters [Hirst and Froggatt, 2012]. Dries Lesage [2011] believes the G20 can take the lead in developing a modern and coherent strategy for a sustainable energy future that benefits everybody, expressing optimism on the role that can be played by the G20 in global energy governance. There are two noteworthy performances by the G20 in global energy governance. First, it has undertaken efforts to curb excessive volatility in oil prices and enhance transparency in oil and gas markets. A key element in this exercise is the improvement of the JODI database. Another important project is the phase-out of fossil fuel subsidies, which now contribute massively to global warming and cost the governments of developing countries' billions of dollars per year [Lesage, 2011].

However, not much progress has been made since 2011. At present, the transparent oil and natural market information system, represented by the JODI database, is supported by relevant countries through the G20 platform. Clearly, political support from G20 members is vital to enhance the reliability and relevance of JODI and its further success. In addition, financial support for JODI seminars from G20 members is important for further development of the initiative. This constitutes a significant part of JODI's capacity building. In short, a comprehensive (including oil, gas and coal) and authoritative JODI data-sharing mechanism is fundamental for effective global energy governance. It should be a real goal of global energy governance and attainable in the near future.

The goal to phase out inefficient fossil fuel subsidies was agreed to at the 2009 Pittsburgh Summit. Progress since then, however, has been slow. There was no strict timeline or road map set out, although almost every summit since then has called for the elimination of these subsidies. The slow progress has been used as proof of the failure of the G20 and to oppose involving the G20 in global energy governance. At the 2012 Los Cabos Summit, G20 leaders tasked their finance ministers with establishing a voluntary peer review process for G20 members. The process is mostly undertaken through a process of mutual review between countries, but

this is subject to difficulties among members of G20 and often takes time. The United States and China, the two biggest powers with large numbers of fossil fuel subsidies, agreed to do a joint peer review of those subsidies in the 2014 U.S.-China Joint Announcement on Climate Change, which should have boosted the slow process. Once the first round of voluntary peer review by the United States and China was complete, a second round involving other G20 members was expected to commence in mid 2015 [G20 Energy Sustainability Working Group, 2014]. By October 2015, the reviews by the United States and China were being finalized and Germany and Mexico had announced they would undergo a second round of peer reviews [IEA and OECD, 2015].

The Clean Energy Ministerial, a multilateral U.S. initiative that resulted from the Copenhagen climate conference in 2009, is another G20-related achievement on global energy governance. It began to report to the Cannes Summit in 2011. The G20 Leaders' Declaration at St. Petersburg in 2013 echoed the call by the International Atomic Energy Agency Action Plan on Nuclear Safety for multilateral cooperation to achieve a global nuclear liability regime, one year after the Fukushima catastrophe in 2011.

The ongoing energy initiatives and close engagement of the G20 regimes are very significant for addressing the real weaknesses and gaps in global energy governance, although progress, including creating a JODI mechanism and phasing out fossil-fuel subsidies, is very slow. One main reason for the slow progress concerns the very nature of the G20, which does not act as a genuine political steering committee in the fragmented field of global energy governance. As stated earlier, energy is an issue highly burdened with strategic implications. Governments are reluctant to engage closely with any official multilateral institution equipped with cohesive mechanisms for more coordination. An informal country grouping with a voluntary process, however, might be easily accepted. To make it worse, energy issues are still not among the top priorities on the G20's agenda, so there is less political will to push for the goals of the energy governance.

Lesage [2011] suggests establishing a G20 energy task force to do the overall strategic thinking on global energy governance that would contribute to policy coherence and provide the political stimulus on behalf of the countries that bear a great responsibility for the world's energy problems. Other scholars have proposed a standing, but flexible, network of officials from the G20 and multilateral institutions, comparable to the Financial Stability Board [Victor and Yueh, 2010]. However, constraints on the G20 prevent these proposals from being considered seriously. New momentum for global energy governance is needed, and perhaps China's more active engagement can deliver the necessary thrust.

China's Participation in Global Governance through the G20

China could reap huge advantages by actively participating in global governance by way of the G20 at a low economic and political cost. By participating in the G20 summits, China entered onto the centre stage of global economic governance and has received recognition and approval as a major economic power in the G20. It has recently demonstrated an understanding of the significance of the G20, particularly as a platform for promoting effective governance of global energy markets.

Most importantly, the G20 provides an alternative to guarantee China's energy security. The rise of the G20 and global governance achievements in economics, finance, development and energy demonstrates that the new concept of collective security to guarantee energy security provides another choice for China's efforts to secure its own energy supply. It has almost no cost economically and zero risk politically, compared to its geopolitical strategy. All that is needed from China is to change the concept for its elites and top policymakers and to involve

talents and bureaucratic agencies more. The potential gains could be greater than those from a geopolitical approach.

Second, participation in global energy governance under the G20 is a good choice to appease the doubt from western countries about China's motivation for acquiring global energy and to enhance China's image, improving relations with western countries in the international energy market. With its huge volume of imported oil and gas in the international market and its outsider status with regard to major international energy organizations, China constitutes the weakest link in the existing global governance of energy markets and also the most challenging factor. Its closer engagement and initiatives in energy governance under the G20 framework will be a convincing sign to other major players that China could be a constructive force in global energy governance.

Third, China should take the opportunity of its 2016 G20 presidency, when it can put energy governance on the list of top priorities, to negotiate a way to join the IEA. Among all the organizations engaged in global energy governance, the IEA has the greatest potential to be "the one" in the future. Ann Florini [2011] believes that despite its constrained membership, the IEA is at the centre of many key developments in global energy governance. As a non-member partner country, China already cooperates with the IEA in many aspects. China's Ministry of Science and Technology and the IEA have established good communication channels for policy research. China has a cooperation agreement with the IEA's network of 40 international technology cooperation agreements. Since 2013, China has belonged to 19 of its implementing agreements for technology collaboration and regularly participates in its senior technology committee. The IEA has expressed an interest in China joining the organization.[7] If China is determined to join, the requirement of being a member of the Organisation for Economic Co-operation and Development (OECD) should not be a major stumbling block. From China's point of view, joining IEA would represent a significant shift in its energy security strategy and would imply that China embraces the liberal way to seek its energy supply security. It requires great determination to move forward.

Fourth, substantial participation in global energy governance can help China acquire the capability for engaging in setting prices on international oil and gas markets. Several means are available to improve China's performance, coordinating strategic oil reserves; joining the major energy governance mechanisms; and updating the Shanghai International Energy Trade Centre and making it the "Shanghai crude oil future trading centre" to participate in international oil trade. Some progress has been made in this regard. The China Securities Regulatory Commission approved the trade of crude oil futures on the Shanghai Futures Exchange in December 2014. All these goals can be facilitated if China pursues them under the framework of the G20. At the 2014 G20 Brisbane Summit, China agreed to publish data on its oil reserves, and it has already reached an agreement with the United States on a joint peer review of inefficient fossil fuel subsidies under the G20. These are important steps for China's participation in energy governance at the G20. Its future involvement in the comprehensive JODI oil information mechanism through the G20 will be helpful for building the Shanghai crude oil future trading centre based on transparency and effective supervision.

Fifth, innovation in energy technology, especially clean energy, is significant for countries such as China and the United States to achieve their goals in clean energy and climate change. Cooperation and transfer in energy technology, especially clean energy, are highly important for promoting common goals in climate change. The G20 is the perfect platform to promote cooperation in energy technology. The Clean Energy Ministerial, the International Renewable Energy

[7] Nobuo Tanaka, as IEA president, once said that if China demonstrated a strong desire to join, the IEA could modify its membership rules that prevented it from joining [Wang and Wei, 2013].

Agency (IRENA) and the International Partnership for Energy Efficiency Cooperation (IPEEC) are institutions focused on developing clean, renewable energy and energy efficiency, and they have close working relations with the G20 under the G20 Energy Efficiency Action Plan.[8]

G20 summitry is widely perceived in China's policy communities as the ideal platform for participating in global governance. To create and strengthen a political framework for international energy cooperation, China needs to play a leading role in the G20. The facts that energy governance is not the top priority on the G20 agenda and that China is not a member of major international energy organizations restrain China's active engagement on energy governance at the G20. However, with the United States unwilling and incapable of action due to domestic deadlock and with China's hosting the summit in 2016, China is expected to lead the G20 with its agenda-setting responsibilities and its energy goals could be pushed.

Conclusion

China currently prioritizes a traditional geopolitical approach over participation in global energy governance for its energy supply security. The new Belt and Road strategy, although still mainly focused on regional and bilateral ways to promote China's energy security, contains elements that could lead to China's more active participation, including in global governance. The key question is whether such active participation in global governance can coordinate with China's geopolitical approach. The litmus test will be how China promotes the Asian Infrastructure Investment Bank and what kind of rules and governing mechanisms of the bank are established. How will it address its role in advancing the infrastructure investment and construction in Asia, including energy infrastructure, to accommodate China's interest in connecting the neighbouring countries and energy-rich Central Asia and the Middle East? What can China do with its hosting of the G20 in 2016 with respect to global energy governance?

The biggest advantage of the G20 platform is that it brings together the strengths and resources of existing international regimes to push its own agenda. Just as the G20 has worked closely with the IMF and the World Bank, China should push the G20 energy working group to establish a closer connection with the IEA and OPEC to begin discussions on setting up a framework for global governance of energy markets. Chinese leaders understand that the G20 is one of a few international institutions in which China is an equal participant, and even as a leading country. The energy-governing issues handled at the G20 through its energy arrangements could maximize China's interest in participating in global energy governance, despite not being a member of the IEA, OPEC, the Energy Charter Treaty or other important global energy-governing organizations.

The G20 Hangzhou Summit is a golden opportunity for China to play a positive, even a leading, role in global energy governance. As a leading consumer of energy and renewable energy, China should put the issue of global energy governance on its list of priorities for the G20 agenda. Given China's lesser engagement with existing global energy-governing organizations and its marginalized status in the global energy governance system, new channels would be China's best choice. China should put clean energy and climate change control as the most important issues for its participation in global energy governance at the G20. Meanwhile, as the

[8] In 2015, IPEEC reported to the G20 through the Energy Sustainability Working Group. The Global Superior Energy Performance Partnership (GSEP) is one of the CEM's 13 initiatives. The GSEP Power Working Group also reported to the G20 in 2015 through the G20 Energy Sustainability Working Group on sharing knowledge of high-efficiency, low-emissions electricity-generation technologies. At IRENA's 2015 assembly, Turkey – which held the presidency of the G20 in 2015 and is also a member of IRENA – declared it would leverage synergies between the G20 and IRENA, with a focus on promoting energy access in sub-Saharan Africa and assessing the influence of falling oil prices on renewable energy investments [International Institute for Sustainable Development, 2015].

largest oil importer, China cannot afford to be excluded from the energy cooperation on fossil fuels. A specific and substantial, but not extremely complicated, issue can be an appropriate starting point for China's involvement. Information sharing through the JODI database, operated by the IEF, the IEA and OPEC on the G20 platform, is perhaps one option.

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Evaluating Global Institutions' Effectiveness

Assessing Summit Institutions Engagement with Other International Organizations in the Process of Global Governance

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Recent decades have witnessed dramatic changes all over the world. One major trend is the proliferation and diversification of actors, forums and their arrangements to address global governance challenges, which has led to fragmentation in global governance. However, such contested multilateralism has a positive dimension, as the emergence of informal multilateral institutions claiming a major role in defining the global governance agenda creates alternatives for providing common goods. New arrangements acquire their own actorness and place in the system of global governance. In certain policy areas, there is a clear trend for the new summit institutions' leadership. The most visible recent cases include the Group of 20 (G20), the BRICS group of Brazil, Russia, India, China and South Africa, and the Asia-Pacific Economic Cooperation (APEC) forum, with APEC gaining importance regionally and globally. These new informal groupings work on their own agenda. They also engage with established international organizations to steer global governance processes. Taken together, the transformative trends in international relations, the emergence of new actors, tensions between exclusive and inclusive clubs, and demands for the legitimacy and effectiveness of the international institutions define the relevance of the study, systematization and comparative analysis of the effectiveness of this model of cooperation among international institutions. This article builds an analytical framework by undertaking three tasks. It first reviews the key concepts. Second, it argues for a rational choice institutionalist approach. Third, it puts forward a hypothesis for research: to compensate for their inefficiencies, summit institutions engage with other international organizations in a mode they regard most efficient for attainment of their goals. The modes of those institutions' engagement with other international organizations as reflected in the leaders' discourse should thus indicate the role of those institutions in the global governance architecture, which is imputed at their launch and subsequent evolution. The hypothesis further suggests that the "governing in alliance" mode enhances the effectiveness of the summit institutions; however, those institutions' use is not mutually exclusive. The modes of engagement with international institutions coexist in the engagement of informal summit institutions with other international organizations. The choice is defined by the policy area and type of organizations. The article concludes with a case study of BRICS engagement with international institutions. The results confirm that the choice of engagement model reflects the forum's role and place in the global governance architecture. To maximize benefits from cooperation, the BRICS engages with relevant international organizations on agenda priorities at different institutional levels. Two types of engagement are typical for the BRICS: catalytic engagement (exerting an influence for changes in international organizations through endorsement or stimulus, or compelling them to reform) and parallel treatment (creation of the institution's own mechanisms). By establishing

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new institutions, the BRICS consistently strengthens its cooperation with other international institutions. Its choice of model depends on the policy area, where it is developing cooperation and the perception of the organization's relevance to BRICS objectives. BRICS engagement with United Nations organizations and the World Trade Organization follows the model of catalytic influence, whereas with the G20, BRICS engagement based on the model of governance in alliance with multilateral institutions remained unrealized.

Key words: global governance, informal summit institutions, engagement models, international organizations, efficiency, legitimacy, rational choice theory, G20, BRICS, APEC

Introduction: The Context and the Challenges

The past decades have witnessed dramatic changes in the world. The bipolar world order has vanished, the unipolar period has passed and a new multipolar world order is emerging.

In this unraveling globalized world, geopolitical, economic, environmental, societal and technological challenges are tightly interconnected [Haass, 2014]. They "transcend borders and spheres of influence and require stakeholders to work together, yet these risks also threaten to undermine the trust and collaboration needed to adapt to the challenges of the new global context" [World Economic Forum, 2015]. The challenges and their perceptions have been driving shifts in international cooperation. One major trend is "the proliferation and diversification of actors, forums and their arrangements to address global governance challenges," leading to a presumed fragmentation of global governance [Egel, 2015, pp. 4–5]. However, fragmentation is also often perceived positively as "contested multilateralism," as institutional diversity can produce better outcomes than "stalled cooperation through existing venues" struggling to respond to persisting and emerging challenges [Egel, 2015, p. 5].

In spite of an increasing number of international actors, including non-state actors, both informal and informal organizations as well as governments remain key players. Responsibility for ensuring that this emerging multipolar world will be stable and contributes to global well-being rests with the states – both the established powers and the rising centres of power – as well as with the principals of global governance and their agents – international institutions, global and regional, multilateral and plurilateral.

The emergence of informal multilateral institutions claiming a major role in defining the global governance agenda creates alternatives for providing common goods. These new summitry institutions, led by the Group of Seven/Eight (G7/8), and more recently Group of 20 and the BRICS group of Brazil, Russia, India, China and South Africa, stand at the centre of the galaxy of global governance institutions. This article will deal with the most visible recent cases of G20 and BRICS, and the Asia-Pacific Economic Cooperation forum, which is gaining importance regionally and globally.

These new informal groupings work on their own agenda. They also engage with established international organizations to steer global governance processes. Those formal organizations have "the UN system as the core of organized multilateral order" [Thakur, Job, Serrano et al., 2014, p. 1]. They are in need of reform and cannot respond on their own to the interconnected persisting and arising challenges. Inter-institutional cooperative mechanisms are being transformed, and new models of cooperation are being established.

In certain areas, a trend for the informal groupings leadership is evident. On financial regulation, the G20 has taken up the initiative for decision making since its first summit in Washington, issuing mandates for further elaboration and implementation to relevant international organizations.

The BRICS has adopted a different approach, characteristic of the G7 in the early years of its performance, transmitting signals to international organizations, treating the issues within the summit-based apparatus, or establishing their own institutions, such as the New Development Bank (NDB) [Putnam and Bayne, 1987, pp. 156–57].

If common sense is any guide, global governance would gain effectiveness from a combination of the "catalyst," "core group" and "parallel treatment" approaches exercised by summitry institutions: influencing international organizations' changes through endorsement or stimulus, or compelling them to reform; setting a new direction by taking a lead that the other organizations would follow; and creating the informal institutions' own mechanisms. The first two approaches, especially in relation with the United Nations, the International Monetary Fund (IMF), the World Bank, the World Trade Organization (WTO), the Organisation for Economic Co-operation and Development (OECD) and relevant regional organizations, would undoubtedly enhance the resilience, legitimacy and effectiveness of the global governance architecture. The parallel treatment, however, could initially give rise to tensions and concerns about competition or rivalry, but fills a gap in governance and serves the needs of members and other interested stakeholders, with the new arrangements acquiring their own actorness and a place in the system of global governance.

The transformative trends in international relations, emergence of new actors, tensions between exclusive and inclusive clubs, demands for the legitimacy and effectiveness of the international institutions, put together, define the relevance of the systematization and comparative analysis of the effectiveness of the international institution cooperation model.

The Concepts and the Analytical Paradigm

To help build the analytical framework, this section undertakes three tasks. It first reviews the key concepts. Second, it argues for a rational choice institutionalist approach. Third, it puts forward the hypothesis for research.

Concepts

More than 15 years ago, R.O. Keohane and Joseph S. Nye Jr. [2001, p. 1] defined globalization as a state of the world involving networks of interdependence at multicontinental distances, where multiple economic, military, environmental processes strengthen or "thicken" these networks. Earlier, James N. Rosenau [1995, p. 14], contemplating the prospects for global governance in the 21st century, defined governance as the process whereby an organization or society steers itself, with dynamics of communication and control being central to the process. Given increasing globalization, interdependence, disaggregation, proliferation of control mechanisms, governance is not a constant. It is a continuous process of evolution that "fluctuates between order and disorder as conditions change and emergent properties consolidate and solidify" [Rosenau, 1995, p. 18]. The combined effect of these contradictory trends leads to a lessening of the capacities for governance at the level of the national state, thus pushing governments to work out arrangements for collective governance at transnational level [Rosenau, 1995, p. 19]. Cooperative impulses driven by dissatisfaction over or frustration with existing systems and expectations that new arrangements may respond to persisting challenges meet resistance and opposition, "since any expansion of governance is bound to be detrimental to those who have a stake in the status quo" [Rosenau, 1995, p. 21]. Nevertheless, global governance systems evolve in the context of progress and hope that the new multilateral institutions will effectively address the challenges that "clutter the global agenda" [Rosenau, 1995, p. 39].

The global governance that has emerged "entails multilevel and networked relations and interactions for managing and facilitating linkages across policy areas and domains. It consists of formal and informal arrangements that provide more order and stability for a world in a constant flux than would occur naturally – the range of international cooperation without a world government ... The content of global governance embraces the totality of laws, norms, policies, and institutions that define, constitute and mediate relations between citizens, societies, markets, and states in the international system – the wielders and objects of the exercise of the international public power" [Thakur, Job, Serrano et al., 2014, p. 1].

Global governance is exercised by states, formal and informal intergovernmental institutions, transnational networks, business corporations and nongovernmental organizations. This study focuses on formal multilateral international institutions and informal summitry institutions, and their interaction in steering global governance processes.

The concept of "multilateralism" centres on the collectively agreed norms, rules and principles that guide and govern interstate behaviour. Regionalism is a particular expression of multilateralism [Renard, 2015, p. 4]. Multilateral institutions are all based on the principles of generalized reciprocity, in which states make common undertakings and agree to act cooperatively [Hampson and Heinbecker, 2011, p. 300].

"International institution" is an overarching term for international organizations, regimes and clubs that differ in their degree of institutionalization. Keohane and Nye [2001, p. 2] consider regimes to be at the core of international relations, designed to enable elites in governments to manage interdependence: "early 21st century globalism is organized around international regimes and their accompanying organizations, from the World Trade Organization to the World Tourism Organization." Regimes were constituted by rules and norms that governed their members' relationships in specific issue areas of international relations. Although central to international relations, regimes were weak devices for cooperation dominated by states, operated as clubs and dominated by a small number of rich countries with shared priorities [Keohane, Nye. 2001, p. 2].

Criticism of the club governance model intensified in the beginning of the 21st century, with an increasing perception of its illegitimacy in the context of the rising role of developing countries in the world economy.

There are, in fact, several definitions of club mechanisms. Some authors assert that a club does not imply a common ideological commitment of its members, whose positions can differ on policy and economics ideas [Reay, 2012]. Club mechanisms are sometimes considered flexible, non-institutionalized intergovernmental platforms for engagement [Drezner, 2007]. Other experts define a club as a group with clear rules, concrete and exclusive privileges for members, and a high degree of protection from external pressure. The concept is also applied to mechanisms bringing together high-level individuals – representatives of the public and private sectors as well as the epistemic community, such as the Group of 30, "held together by elite peer recognition, common and mutually reinforcing interests, and an ambition to provide global public goods in line with values its members consider honorable" [Tsingou, 2015, p. 226].

In recent years, with the establishment of the BRICS and G20 at the leaders' level, there is more and more attention on summit institutions.

Informal summitry institutions are defined as international institutions with limited membership, relatively low bureaucracy, and reliance on open, flexible and voluntary approaches. Regular meetings of heads of state and government who engage on a wide range of international, regional and domestic politics stand at the pinnacle of such international arrangements, which involve many actors operating according to established procedures on two levels: domestic and international. Commitments contained in their collectively agreed documents are not legally

binding, but implementation is stimulated by peer pressure. Among such bodies engaged in global and regional governance are the G7/8, G20, BRICS and APEC.

Informal summitry institutions, as exclusive clubs, are often accused of being illegitimate and ineffective. There are many dimensions and definitions of legitimacy and effectiveness. Legitimacy can be defined as acceptability of the institution and its rules, decisions and activities to members, non-members and international institutions. The input dimension of legitimacy includes the three indicators of decision making (decision-making mode), transparency (openness and accountability, both external and internal, ex-ante and ex-post) and inclusiveness (number of members, number of non-members invited, number of international organizations involved). The output dimension of legitimacy includes three criteria: commitments made (concrete and publicly agreed decisions), delivery on those commitments (compliance performance) and outcomes (policy changes at the international or national level) [see Gnath, Mildner and Schmucker, 2012]. Legitimacy, especially its output dimension, correlates closely with effectiveness. Effectiveness is understood as an institution's capacity to agree on collective commitments, deliver on the pledges made and exert policy changes that help solve collective problems [see Gnath, Mildner and Schmucker, 2012]. The analysis here defines effectiveness as the summitry institutions' ability to agree on collective or coordinated actions and deliver on the commitments made by the leaders engaging other institutions to attain their goals and perform the mission or functions intended by the founding members.

Analytical Paradigm

For this study, rational choice institutionalism was adopted as the analytical framework because in terms of the institutional origins, it turns "primarily on the functions that these institutions perform and the benefits they provide" [Hall and Taylor, 1996, p. 952]. This approach can explain not only the origins, but also the institutions' existence and evolution, as well the relationship between institutions. Institutions are thus created by the states because the states see benefits accruing to them from the functions performed by the institutions [Rosamond, 2000, p. 116].

The calculus approach fits the analysis of summitry institutions bringing together states from a wide range of cultures, continents and economic development, notably well. Its distinctive features clearly apply to the analysis of the origin and performance of the G20 and the BRICS. First, the members act in a highly strategic manner to maximize the attainment of their priorities. Second, summitry presents an arrangement where strategic interaction between leaders plays a major role in determining the political outcomes. Third, according to Peter Hall and Rosemary Taylor [1996], rational choice institutionalism offers the greatest analytical leverage to settings where consensus among actors accustomed to strategic action and of roughly equal standing is necessary to secure institutional changes – the features typical of summitry institutions. Fourth, the institutions are created by the voluntary agreement of the leaders of the respective countries to perform concrete functions and missions. Thus the leaders designated the G20 to be the premier forum for their international economic cooperation [G20, 2009, para. 19]. The BRICS came together to establish a platform for dialogue and cooperation to promote peace, security and development in a multipolar, interdependent and increasingly complex, globalizing world, on the basis of universally recognized norms of international law and multilateral decision making [BRICS, 2012, para. 3].

Any theory has its strengths and weaknesses. However, rational choice limitations do not restrict this analysis. First, the study draws on its highly functionalist approach to compare the institutions' performance on global governance functions and identify how summitry institutions compensate for their inefficiencies through interaction with other international organizations.

Second, the analysis tracks the evolution of the G20, BRICS and APEC based on several assumptions. The intentions of the founders may not be fully understood or attained, and they may not fully perceive the effects of the institutions they establish, or have control over the course of events. However, the agenda and commitments the leaders make nevertheless reflect intentions that change in response to external and internal dynamics. The modes of the summitry institutions' engagement with other international organizations as reflected in the leaders' discourse indicate their place and role in the global governance architecture, attributed to them at their launch and subsequent evolution.

Third, actors create an institution to realize certain functions they value by a voluntary agreement in a world already crowded by other organizations. In order to maximize benefits from the new arrangement, the founders may choose to engage voluntarily with existing institutions in a mode they regard most efficient for attaining their goals.

Thus, the study focuses on the interaction of the G20, BRICS and APEC with other international organizations in fulfilling their global governance functions of deliberation, direction setting, decision making, delivery and global governance development [Kirton, 2013, pp. 37–39]. Deliberation is understood as face-to-face discussions of the leaders encoded in the collective communiqués. Direction setting is defined as collective affirmation of shared principles, norms and prescriptions. Decision making is regarded as credible, clear, collective commitments with sufficient precision, obligation and delegation. Delivery is understood as stated compliance with collective decisions. Global governance development is perceived as the group's ability to use other international institutions and create its own institutions as global governance mechanisms.

To date, the debate on the relationship between summitry institutions and international organizations has centred on the G7/8's connections with multilateral organizations. Four schools of thought offer arguments on G7/8 governance through multilateral organizations, G8 governance against multilateral organizations, G8 governance without multilateral organizations and G8 governance in alliance with the multilateral organizations [Kirton, 2010].

The first school of thought, G7/8 governance through multilateral organizations, is advanced by Ella Kokotsis [1999] in her democratic institutionalist model of G7/8 performance. She argues that the work of multilateral organizations contributes to compliance with G7/8 commitments when those organizations are directly relevant to the specific commitments and when those organizations are controlled by G7/8 members [see also Kokotsis and Daniels, 1999, pp. 74–94].

The second school, G7/8 governance against multilateral organizations, has been developed by John Kirton [2010, pp. 25–26] in his concert equality model. It emphasizes that the G7/8 was created with a strong anti-bureaucratic bias amidst the perceived failure of the multilateral organizations to meet the shocks of the early 1970s. According to Kirton, the G7/8 has increasingly moved from reinforcing and reforming to replacing the old multilateral organizations with antithetical alternatives and their order with a fundamentally different, G7/8-centred system of its own.

The third school, G7/8 governance without international organizations, has been developed by Nicholas Bayne [2000, p. 45]. It suggests that the G7/8–international institution relationship is one of mutual coexistence and non-involvement when their agendas are different, but one of tension when they are the same.

The fourth school of thought argues that the G7/8 and international organizations in their diversity serve a common cause and thus should act as allies. It builds on an assumption that, given the challenges of global governance, the G7/8 members' choice of the mode of interaction with the international institutions will tilt rationally toward G7/8 governance "in alliance with the multilateral organizations" [Larionova, 2010, pp. 45–46].

The evidence base from the decade before the 2008 global financial crisis (1998 to 2007) of the G8 members' interaction with the multilateral international institutions indicates that governance through international institutions remained their preferred choice of engagement model (56%), the trend gradually pushed toward the G8 governance in alliance with multilateral organizations (32%) [Larionova, 2010, p. 60]. It was especially pronounced with regard to development and health. Simultaneously, on the more sensitive issues of security and energy governance through international institutions remained predominant. A downward tendency to adopt actions without multilateral institutions was observable (6% of the overall number of actions). G8 members' preference for the model of governance without international institutions peaked at 10% in 2002–04 and subsequently decreased significantly to a low of 4% in 2007.

Available evidence suggests that these four modes of "governing though," "governing against," "governing without" and "governing in alliance" are practised by the G20 and BRICS, which emerged in 2008 and 2009 respectively, as well as the older APEC.

The study undertakes to test this assumption. The modes of summitry institution engagement with other multilateral organizations are explored in their dynamics and considered indicative of the mission and evolving role of the G20, BRICS and APEC in global governance architecture. The choice of partner institutions, modes and intensity of engagement is accepted to be strategic, intentional and voluntary, aiming to maximize benefits from the arrangements and compensate for efficiency in the performance of the summitry institutions.

The hypothesis is that the governing-in-alliance mode enhances the summitry institution's effectiveness if three conditions exist. The first condition is that summitry institutions interact with multilateral organizations across the chain of global governance functions. The second condition is that the partnership is selective, allowing for the relevance and comparative advantages of the multilateral organizations for a specific policy area. The third condition is that the summitry institution has the ability to influence the partner institutions and the political will to engage with them as allies, which can make an important contribution to the summitry institution's functions, legitimacy and effectiveness.

The study does not deal with the issue of the other international organizations' will to engage with the summitry institutions. However, it is hypothesized that their involvement is strategic, intentional and voluntary. It is also presumed that the connection between international organizations and the summitry institutions is "a synergistic, two-way street," with the summitry institutions support for international organizations constituting a cause of the organizations' help for the G20, BRICS and APEC in implementing their core functions [Kirton, 2010, p. 24].

The hypothesis further suggests that the four modes are not mutually exclusive, but coexist, and that the summitry institutions' choice of models will differ across issues and organizations. Governance through and governance in alliance with multilateral organizations will be the two dominant models, whereas governance against and governance without will be resorted to less frequently. The comprehensive nature of many of the priority issues will be reflected in the modality of the summitry institutions' interaction with international organizations through the engagement of several institutions in the implementation of global governance functions.

The Methodology

The study explores the G20, BRICS and APEC modes of engagement with international multilateral organizations focusing on four policy areas that are priorities for each summitry institution: macroeconomics, financial regulation, international trade and investment.

The period of analysis covers almost a decade beginning in 2008. The year was selected as the starting point as it marks the beginning of the global financial crisis, the first meeting of the G20 in Washington and the first BRICS summit on the fringes of the G8 summit in Hokkaido Toyako. The timeline allows enough compatible data to be generated for a comparative analysis and enough time to observe the dynamics of the engagement between the three informal summitry institutions and international multilateral organizations.

The content of all G20, BRICS and APEC documents was analyzed to test the assumption that they resort to the four modes of governing through, governing against, governing without and governing in alliance. As the first step, all references to international multilateral organizations were identified and systematized (see Appendix A). Most such references were cases of governing though and governing in alliance. References to the summitry institutions' own mechanisms were typically cases of governing against and governing without. A list of verbal markers signalling the type of mode referred to, assembled in the course of previous research, serves as formal guidance for classifying the references (see Appendix B).

The analysis then used two parameters: the number of references to institutions and the intensity, expressed as the correlation between the number of references to institutions and the number of characters (including spaces and punctuation) in the documents as follows:

$$D_I = M_1/S_1,$$

where D_I is the intensity of references to international organizations in a certain year (period), M_1 is the number of references made to the institution in that year (period) and S_1 is the total number of characters in the documents for that year (period). To make the findings more easily understood, D_1 is multiplied by 10,000.

Thus the methodology allows the identification of the intensity and dynamics of G20, BRICS and APEC interaction with international multilateral organizations, as well as the intensity and dynamics of their preferred engagement modes with concrete organizations in the four policy areas of macroeconomic policy, financial regulation, international trade and investment. The study also reveals the intensity and dynamics of governing-against and governing-without models.

To verify if and how the summitry institutions engage the international multilateral organizations across the chain of the global governance functions, all G20, BRICS and APEC documents were analyzed to single out the text units denoting the functions of deliberation, direction setting, decision making, delivery and global governance development. To enable quantification and comparative analysis, the study employed absolute and relative data. The absolute data on the number of symbols denoting a certain function in the text was translated into relative data calculated as the share of the function in the total of all texts and expressed as a percentage. A text unit can be counted as implementing only one function.

This dissection of the G20, BRICS and APEC into functional units helps reveal the intensity of references to international organizations and the preferred modes of the summitry institutions engagement with the international multilateral organizations within the array of governance functions they perform. It also highlights the functions that the G20, BRICS and APEC tend to perform resorting to governing-against and governing-without models.

Findings

In the first stage of the study, the methodology was applied to assess BRICS engagement with other international organizations in the process of global governance. The results indicate that to enhance effectiveness of its collective actions, the BRICS engages with international organi-

zations at various levels. To date, 636 references to 48 intergovernmental organizations (IGOs) have been registered in the BRICS documents. The number of the references increased from summit to summit with the exception of the second leaders' meeting in Brasilia. The top ten IGOs in BRICS discourse were the UN with the highest share at 28%, the G20 at 10.8%, the WTO following closely at 10.4%, the IMF and the World Bank at 8.8% and 4.2% respectively, the World Health Organization (WHO) at 8.5%, and the UN Conference on Trade and Development (UNCTAD) rounding out the top ten at 3.5%. The BRICS institutions – the NDB and the Contingent Reserve Arrangement (CRA) – each took a 5% share in the BRICS discourse.

Two types of engagement are characteristic for the BRICS: catalytic influence (the stimulation and support of reform and changes) and parallel treatment (the creation of the forum's own institutions). Since 2012, the BRICS has been working toward establishing its own institutions. The NDB and CRA are often perceived as alternatives to existing institutions of the international financial system. At the same time, the BRICS almost never resorts to the "core group" model often practised by other summit institutions, particularly the G20, in leading in a new direction that other organizations would follow nor does it tend to use the governing-through model [see Shelepov, 2015].

The results of the study of BRICS engagement with international organizations confirm the hypotheses that the leaders' choice of engagement model reflects the institution's role and place in the global governance architecture, attributed to the forum at its launch and consolidated over its evolution. Thus, by pledging "to support a multipolar, equitable and democratic world order, based on international law, equality, mutual respect, cooperation, coordinated action and collective decision-making of all States," the BRICS consistently engages with the UN and its organizations, simultaneously striving to stimulate their reform [BRIC, 2010, para. 2]. This catalytic influence enhances the effectiveness of both the UN and the BRICS cooperation with it. This trend was strengthened in the course of the Russian presidency in 2015.

Combating financial and economic crisis, ensuring strong, sustainable and balanced growth, facilitating development are key components of the BRICS mission. Indeed, by setting these objectives the BRICS recognizes the G20 as the premier forum for international economic coordination and cooperation and illustrates its unwavering support of G20 decisions on inclusive growth. Although the commitment to engage with the G20 weakened somewhat during the period from Sanya in 2011 to Fortaleza in 2014, the BRICS reinforced its consultations and coordination on the G20 agenda in 2015 and pledged to continue working to bring greater attention to the issues on the G20 agenda that reflect the priorities of developing countries and emerging markets.

One continued BRICS priority is the reform of the international financial institutions to increase the voice and representation of emerging markets and developing countries in decision making. The leaders' documents promote the legitimacy, credibility and effectiveness of these institutions by consistently calling on the IMF and its members to implement the 14th General Review of Quotas without further delay. However, with catalytic influence not producing any results, the number of references to the IMF and the World Bank has declined since 2012. This trend coincides with a rise in references to the NDB, which increased in 2015.

The BRICS is committed to a strong, open, rules-based multilateral trade system with the WTO at its centre [BRICS, 2011]. This commitment is reflected in its continuous support of the Doha round of trade negotiations, the Trade Facilitation Agreement and a cautious assessment of the multilateral initiatives that go against the fundamental principles of transparency, inclusiveness and multilateralism, that distract members from striving for a collective outcome and that fail to address the development deficit inherited from previous negotiating rounds [BRICS, 2012, para. 12]. Moreover, considering UNCTAD to be the focal point in the UN system on trade,

investment, finance and technologies related to development, BRICS leaders have supported its mandate at every meeting since their New Delhi summit in 2012 [BRICS, 2015, para. 22].

The cornerstone of the BRICS mission is developing mutually enriching and beneficial cooperation and shaping the forum's agenda on a wide range of issues. That deepened cooperation and expanded agenda are accompanied by the institutionalization of BRICS mechanisms. The formal track has grown into a constellation of 14 cooperation formats, including meetings of sherpas and sous-sherpas, central bank governors, ministers and deputy ministers, senior officials, contact groups, and working and experts groups. In 2015, the BRICS launched a dialogue on new policy areas: industrial cooperation, migration, employment, environment and energy. New mechanisms for internal coordination were also set up, such as the working group on socially important economic sectors, the working group on energy saving and energy efficiency, the Basic Agricultural Information Exchange System (BAIES), and the working group on cooperation on information and communications technologies.

The rapid pace of institutionalizing BRICS cooperation is likely to continue. However, that institutionalization does not imply that the BRICS strives to substitute new institutions for existing intergovernmental ones or set up a new fundamentally different BRICS-centred international system. Creating its own institutions consolidates engagement with the relevant IGOs. Thus, in 2015 the BRICS continued to engage with WHO, reaffirmed support for the mandate of the UN International Development Organization, started a dialogue with the International Labour Organization, welcomed the proposal for the NDB to cooperate closely with existing and new financing mechanisms including the Asian Infrastructure Investment Bank, and laid foundations for a dialogue between the countries of the Eurasian Economic Union and the Shanghai Cooperation Organization. In its first ever reference to the OECD, the BRICS committed to continue to cooperate in relevant international forums on issues related to the G20/OECD Action Plan on Base Erosion and Profit Sharing, which suggests that the five BRICS members are prepared to use the OECD's expert potential.

In conclusion, by establishing new institutions, the BRICS consolidates its cooperation with other organizations. The choice of engagement model depends on the policy area, the phase in the development of cooperation and the perception of the organization's relevance to BRICS objectives. The preferred engagement models are catalytic influence and parallel treatment, consistent with the governing-without model. The models are not mutually exclusive, but coexist and change in the course of cooperation. With the UN organizations and the WTO, engagement follows the model of catalytic influence (exerting an influence on international organizations through endorsement or stimulus, or compelling them to reform), whereas, with the G20, the BRICS intention to engage on the governance-in-alliance model remained unfulfilled. The BRICS continues to refrain from issuing mandates to international organizations, hence there are no cases of the governing-through model. As its own institutions strengthen, the BRICS will likely apply the governance-in-alliance model in its cooperation with relevant international organizations.[2]

[2] A full analysis of BRICS engagement models with other international organizations during the Russian presidency will be available in the forthcoming article by Marina Larionova, "Russia's 2015–16 BRICS Presidency: Models of Engagement with International Organizations," *International Organisations Research Journal,* 2016.

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Appendix A: International Multilateral Organizations Mentioned in G20, BRICS, APEC Documents

Africa Partnership Forum

African Capacity Building Foundation

African Regional Technical Assistance Centre

African Union

Alliance for Green Revolution in Africa

Anti-Ballistic Missile Treaty

Anti-Counterfeiting Trade Agreement

ASEAN Centre for Energy

ASEAN Plus Three Cooperation on Food Security

ASEAN Plus Three Emergency Rice Reserve

ASEAN Rice Trade Forum

ASEAN University Network

Asia and South Pacific Initiative to Reduce Emissions

Asia Forest Partnership

Asia and Pacific Plant Protection Commission

Asian Nuclear Safety Network

Asia-Pacific Economic Cooperation

Asia-Pacific Forestry Commission of the Food and Agriculture Organization of the United Nations

Association of Pacific Rim Universities

Association of Southeast Asian Nations

Bank for International Settlements

Basel Committee on Banking Supervision

Biological and Toxin Weapons Convention
Carbon capture and storage partnership
Chemical Weapons Convention
Clean Development Mechanism
Clean Energy Investment Framework
Code of Conduct on the Safety and Security of Radioactive Sources
Commission on the Status of Women and UN Women
Committee on Payment and Settlement Systems
Committee on the Global Financial System
Commonwealth of Independent States
Comprehensive Nuclear-Test-Ban Treaty
Consultative Group on International Agricultural Research
Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
Council of Europe
Counter-Terrorism Committee
Department for Safety and Security
Department of Peacekeeping Operations
East Asia Summit
Economic Community of West African States
Economic Research Institute for ASEAN and East Asia
Education for All
Education for Sustainable Development
Energy Charter Treaty
European Bank for Reconstruction and Development
Extractive Industries Transparency Initiative
Fast Track Initiative
Financial Action Task Force
Financial Literacy Measurement Programme for International Students Assessments
Financial Stability Board
Financial Stability Forum
Fissile Material Cut-Off Treaty
Food and Agriculture Organization of the United Nations
G20
Gas Exporting Countries Forum
General Agreement on Tariffs and Trade
Global Bio-Energy Partnership
Global Business Dialogue on Electronic Commerce
Global Digital Divide Initiative
Global Earth Observation System of Systems
Global Environment Facility
Global Food Safety Fund at the World Bank
Global Forum on Agricultural Research
Global Fund to Fight AIDS, Tuberculosis and Malaria
Global Gas Flaring Reduction Partnership
Global Green Growth Institute

Global Initiative to Combat Nuclear Terrorism
Global Nuclear Energy Partnership
Global Outbreak Alert and Response Network
Global Partnership Against the Spread of Weapons and Materials of Mass Destruction
Global Partnership for Agriculture and Food Security
Global Partnership for Financial Inclusion
Global Partnership for Sustainable Development
Global Plan to Stop TB/Stop TB Partnership
Global Polio Eradication Initiative
Global Research Alliance on Agricultural Greenhouse Gases
Global Science Forum
Green Climate Fund
Hague Conference on Private International Law
Heiligendamm Process
Infrastructure Consortium for Africa
Institute of Electrical and Electronics Engineers
Integrated Framework for Trade-Related Technical Assistance
Intergovernmental Authority on Development
Intergovernmental Panel on Climate Change
Intermediate-Range Nuclear Forces Treaty
International Accounting Standards Board
International Air Transport Association
International Association of Insurance Supervisors
International Atomic Energy Agency
International Bank for Reconstruction and Development
International Center for Settlement of Investment Disputes
International Chamber of Commerce
International Civil Aviation Organization
International Committee of the Red Cross
International Competition Network
International Confederation of Free Trade Unions
International Convention for the Safety of Life at Sea
International Convention for the Suppression of the Financing of Terrorism
International Criminal Tribunal for the Former Yugoslavia
International Development Association
International Electrotechnical Commission
International Energy Agency
International Energy Forum
International Finance Corporation
International Food Policy Research Institute
International Food Safety Authorities Network
International Fund for Agricultural Development
International Health Partnership
International Labour Organization
International Maritime Organization

International Monetary Fund
International Oil Pollution Compensation Convention
International Organisation of Employers
International Organization for Standardization
International Organization of Securities Commissions
International Partnership for a Hydrogen Economy
International Partnership for Energy Efficiency Cooperation
International Renewable Energy Agency
International Smart Grid Action Network
International Strategy for Disaster Reduction
International Trade Centre
International Treaty for Plant Genetic Resources for Food and Agriculture
International Tropical Timber Agreement
International Tropical Timber Organization
International Working Group of Sovereign Wealth Funds
International Working Group on Land Transport Security
Investment Climate Facility
Telecommunication Standardization Sector of the International Telecommunication Union
Joint United Nations Programme on HIV and AIDS
Major Economies Forum
Mediterranean Renewable Energy Partnership
Missile Technology Control Regime
Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests
Multilateral Investment Guarantee Agency
New Partnership for Africa's Development
Non-Proliferation Treaty
Nuclear Energy Agency
Nuclear Safety and Security Group
Nuclear Safety Working Group
Nuclear Suppliers Group
Office for Disarmament Affairs
One Village One Product
Organisation for the Prohibition of Chemical Weapons
Organisation of African Unity
Organization for Security and Co-operation in Europe
Organization of American States
Organisation of Economic co-operation and Development
Organization of the Black Sea Economic Cooperation
Pacific Alliance
Pacific Asia Travel Association
Pacific Economic Cooperation Council
Pacific Islands Forum
Proliferation Security Initiative
Providing for Health Initiative

Rapid Response Forum
Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
Regional Fisheries Management Organizations
Regular Process for Global Reporting and Assessment of the State of the Marine Environment Including Socioeconomic Aspects (United Nations World Ocean Assessment)
Renewable Energy and Energy Efficiency Partnership
Renewable Energy Policy Network
Secure and Facilitated International Travel Initiative
SME Finance Forum
SME Finance Innovation Fund
South East Asia and China Foot and Mouth Disease Campaign
South-East Europe Cooperation Initiative
Southeast Asian Ministers of Education Organization
Southern African Development Community
Stolen Asset Recovery Initiative
Strategic Arms Reduction Treaty
Strategic Offensive Reductions Treaty
Treaty on Conventional Armed Forces in Europe
United Nations
United Nations Children's Emergency Fund
United Nations Commission on International Trade Law
United Nations Commission on Narcotic Drugs
United Nations Commission on Sustainable Development
United Nations Comprehensive Convention on International Terrorism
United Nations Conference on Trade and Development
United Nations Convention Against Corruption
United Nations Department of Economic and Social Affairs
United Nations Development Programme
United Nations Economic and Social Council
United Nations Economic Commission for Africa
United Nations Educational, Scientific and Cultural Organization
United Nations Energy Programme
United Nations Environment Programme
United Nations Forum on Forests
United Nations Framework Convention on Climate Change
United Nations General Assembly
United Nations Global Counter Terrorism Strategy
United Nations High-Level Task Force on the Global Food Crisis
United Nations Human Settlements Programme
United Nations Industrial Development Organization
United Nations International Drug Control Program
United Nations International Strategy for Disaster Reduction
United Nations Office for the Coordination of Humanitarian Affairs
United Nations Office on Drugs and Crime
United Nations Relief and Works Agency for Palestine Refugees in the Near East

United Nations World Tourism Organization

World Bank

World Customs Organization

World Economic Forum

World Food Programme

World Forum for Harmonization of Vehicle Standards of the United Nations Economic Commission for Europe

World Health Organization

World Intellectual Property Organization

World Meteorological Organization

World Organization for Animal Health (OIE)

World Trade Organization

World Travel and Tourism Council

Appendix B: Modes of Interaction between Summitry Institutions and International Organizations

G8 governance against multilateral organizations	G8 governance in alliance with the multilateral organizations	G8 governance through the multilateral organizations	G8 governance without multilateral organizations
We set up We convene (a conference) We decided to forge a new partnership We launched	We must (will) engage We remain engaged We commit ourselves With our partners Together with Partnership We will work with In (close) consultations with We will (jointly) cooperate We must ensure [implementation] We will implement [a multilateral organization's initiative] In cooperation with We welcome endorsement We support (on a regular basis) supporting We reaffirm our support We maintain solid support We pledge our support We provide assistance In close collaboration with We will endeavour with all our partners We signing and ratify We met with We make engagements We provide (technical and financial) assistance We strengthen and Assist We reaffirm our commitment We provide funding We have secured the entry into force Working under auspices We are working to (deliver) Working in support of	We welcome We urge We call on (for) We support [as an acknowledgement] We encourage We attach strong importance We note with approval We note Drawing on [experience] We invite We commend [A multilateral organization] should (must) We look to We endorse We will pursue ... through We forge We take note of We back	We will ask our ministers Among ourselves In our individual and collective capacities

Explaining G20 and BRICS Compliance

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This article explores the internal and external factors influencing the compliance performance of the Group of 20 (G20) and the BRICS group of Brazil, Russia, India, China and South Africa. The authors start with an overview of the G20 and BRICS compliance patterns using comparative data on the number of commitments made by the two institutions, the level of institutional compliance, and distribution of commitments and compliance across issue areas. G20 compliance is traced since the leaders' first 2008 summit in Washington. The BRICS compliance performance record includes data since the third standalone summit in Sanya in 2011.

The study then takes stock of compliance catalysts embedded in the summits' discourse: priority placements, numerical targets, timelines, self-accountability pledges and mandates to implement or monitor implementation. The authors review trends in the use of catalysts and issue areas and identify commonalities and differences.

The analysis then turns to external causes of compliance and focuses on demand for collective actions and members' collective power to respond and deliver on their pledges. Here the study explores whether the self-accountability mechanisms created by the institutions in response to the demand for effectiveness and legitimacy facilitate compliance.

The article concludes by highlighting catalysts, causes of compliance and their combinations with the greatest power to encourage implementation, explaining trends in G20 and BRICS compliance performance.

The data sets on G20 and BRICS differ in terms of scale. The G20 data set contains 1,511 commitments of which 114 have been monitored, and the BRICS data set contains 231 commitments of which 23 have been monitored.

Key words: global governance, informal summit institutions, engagement models, international organizations, efficiency, legitimacy, rational choice theory, G20, BRICS, APEC

Introduction

As informal summit institutions, the Group of 20 (G20) and the BRICS group of Brazil, Russia, India, China and South Africa are often criticized for being illegitimate and ineffective.[1] There are many dimensions and definitions of legitimacy and effectiveness. Legitimacy can

[1] An informal summit institution is an international institution with limited membership, relatively low bureaucracy and reliance on open, flexible and voluntary approaches, and whose heads of government meet regularly. The leaders' meetings stand at the pinnacle of such international or regional arrangements, which involve many actors operating according to established procedures on two levels: domestic and international. Commitments contained in the collectively agreed documents are not legally binding but their implementation

be defined as the acceptability of the institution, its rules, decisions and activities to members, non-member states and international institutions. The input dimension of legitimacy includes the three indicators of decision-making (decision making mode), transparency (openness and accountability, both external and internal, ex-ante and ex-post) and inclusiveness (number of member states, number of outreach countries invited, number of international organizations involved) [Gnath, Mildner and Schmucker, 2012]. The output dimension of legitimacy includes the three criteria of commitments (concrete and publicly agreed decisions), delivery on the commitments (compliance performance) and outcomes (policy changes at the international or national level). Effectiveness correlates closely with legitimacy, especially its output dimension. Effectiveness is understood as an institution's capability to agree on collective commitments, deliver on the pledges made and exert policy changes that help solve collective problems (see [Gnath, Mildner and Schmucker, 2012]).

This article focuses on effectiveness as the capacity of the G20 and BRICS to deliver on the commitments made by the leaders at the summits. It explores, compares and explains the compliance performance of both groups.

The Analytical Framework

The methodology used in the study uses the methodology developed and applied by the G7 Research Group since 1996 to monitor compliance. With the advent of G20 at the leaders' level, the methodology was refined to assess G20 compliance performance by the International Organizations Research Institute of the National Research University Higher School of Economics (IORI HSE) and G20 Research Group. Since 2011 it has been fine-tuned by all three teams to track BRICS delivery on the collective decisions.

Assessing Compliance with Commitments

The use of a single analytical framework ensures consistency across members, commitments and presidencies and allows comparative assessments of G7/8, G20 and BRICS performance.

Commitments are selected for analysis from the documents issued by leaders at the summits. Commitments are defined as discrete, specific, publicly expressed, collectively agreed statements of intent; they are a "promise" or "undertaking" by summit members that they will undertake future actions to move toward, meet or adjust to meet an identified welfare target [Kirton, Kokotsis, Guebert et al., 2016].

Compliance assessment deals with priority commitments from each G7/8, G20 and BRICS summit. Priority commitments are those that best capture what the summit as a whole did on the decision-making dimension of its global governance. Due to the large number of commitments that appear in the leaders' documents (for instance, 281 commitments were adopted at the St Petersburg G20 summit), it is difficult to assess every commitment for compliance. Therefore, only commitments that reflect the essence of the summit documents in a reasonably representative way are chosen for compliance analysis. Thus, the selection represents the priorities of the summit and replicates the breakdown of issue areas and the proportion of commitments in each one. The sample is also balanced to allow for comparison with past and future summits. Priority commitments should be chosen that apply to various subsets of countries within the group. The ability to commit fully to the commitment within a year is taken

is stimulated by peer pressure. Among such bodies engaged in global and regional governance are the Group of Seven/Eight (G7/8), the G20, the BRICS and the Asia Pacific Economic Co-operation Forum.

into account to ensure relevance of the results. The commitments should meet some additional criteria, such as performance measurability and significance as identified by the research team and relevant experts [Kirton, Kokotsis, Guebert et al., 2016].

Compliance is understood as national governments' actions geared toward the domestic implementation of the necessary formal legislative and administrative regulations designed to execute summit commitments. Compliance is assessed according to the criteria of official reaffirmation of a summit commitment, internal bureaucratic review and representation, budgetary and resource allocations made or changed, and new or altered programmes, legislation and regulations.

This methodology uses a three-level measurement scale. Full or almost full compliance with a specific commitment is assigned a score of +1. A score of −1 indicates complete or nearly complete failure to implement a particular commitment. A score of 0 is given for inability to deliver or work in progress. Inability to deliver is a situation referring to factors that impede implementation and cannot be controlled by the government of a state assessed for compliance. Work in progress describes initiatives that have been launched but have not yet been completed by the time of the next summit, and whose results therefore cannot be measured and assessed. Compliance scores of −1 and 0 do not necessarily imply an unwillingness to comply. In some cases policy actions need multiple compliance cycles (that is, the periods between summits) to be fully implemented and subsequently measured.

Once the individual compliance scores are determined, averages are calculated for each commitment and member, and for the summit as a whole. These scores can range between −1 and +1.

The analysis draws on the data presented in the G20 and BRICS compliance reports prepared by the G20 Research Group and the IORI HSE for the summits between 2008 and 2014.[2] BRICS compliance data are available only for the summits between 2011 and 2014.[3]

Taking Stock of Compliance Catalysts

Analyzing Catalysts

The analysis focuses on specific approaches of the G20 and the BRICS and the trends emerging in their use of catalysts in their commitments. Compliance catalysts are words, phrases or factors that are embedded in and guide a commitment. They provide instruction on how to implement, proceed or comply with the commitment [Kirton, Kokotsis, Guebert et al., 2016]. The analysis starts with an overview of compliance catalysts embedded in the summits' discourse, and then identifies and systemizes the catalysts in all commitments: priority placement, numerical targets, timelines, self-accountability pledges, references, and mandates to implement or monitor implementation within G20 or BRICS structures.

This study differentiates between self-accountability pledges built into a concrete commitment (a commitment catalyst) and those pertaining to a wide range or the full set of G20 commitments (self-accountability commitments). Both types are expected to exert an impact on G20 compliance performance, although the influence of a catalyst is assumed to be limited to the specific commitment, while self-accountability of a more broad sort is deemed to enhance the institution's compliance performance in responding to demands of external stakeholders for effectiveness and transparency. An example of the broader type of self-accountability is drawn

[2] G20 compliance reports are available on the G20 Information Centre website at http://www.g20.utoronto.ca/compliance.

[3] BRICS compliance reports are available on the BRICS Information Centre website at http://www.brics.utoronto.ca.

from the G20's 2010 Toronto Summit, where the leaders declared: "We are determined to be accountable for the commitments we have made, and have instructed our Ministers and officials to take all necessary steps to implement them fully within agreed timelines" [G20, 2010b].

The study pays special attention to G20 and BRICS engagement with international institutions and whether such engagement fosters implementation. It identifies and systemizes all cases of such international institutions' engagement in all commitments to expose any influence on G20 and BRICS performance.

The debate on the summit institutions' relationship with international organizations has mostly centred on connections between the G7/8 and multilateral organizations. Four schools of thought offer arguments on G7/8 governance through the multilateral organizations, G8 governance against multilateral organizations, G8 governance without multilateral organizations and G8 governance in alliance with the multilateral organizations [Kirton, 2010, pp. 24–27]. According to the available evidence, all four modes of governing though, governing in alliance, governing against and governing without are practised by the G20 and BRICS.

After reviewing the general trends in compliance catalysts, the study explores the monitored commitments for which data on compliance performance are available. The sample is separated into two subsets, those with and without embedded catalysts. The comparison of these subsets is intended to reveal if and how catalysts affect compliance performance.

Analyzing External Causes of Compliance

The second stage of the analysis explores external causes of compliance by focusing on demand for collective action, in the form of members' collective power to respond to demand and deliver on the pledges made.

To assess if and how demand for global governance encourages implementation, the study identifies commitments made in response to the major challenges of the period. The sample does not have any formal markers. Rather, it includes decisions selected by the authors drawing on their understanding of the urgency for collective action to resolve persistent or new risks in a certain policy area at the time of the summit. Some of these commitments are specific to the summit, reflecting changes in demand for the institution's actions. Others are present in all summit documents, reflecting the long-term nature of the challenge or the failure of the club's members to deal with the problem effectively. Compliance performance with these commitments is compared with the average compliance for all commitments with compliance scores available.

In responding to the demand for effectiveness and legitimacy, the institutions make reinforcing self-accountability commitments, for example at St. Petersburg the G20 pledged to "act together and implement all [our] commitments in a timely manner" [G20, 2013]. Such statements are typical of most G20 summits. Overarching pledges on self-accountability and the resulting mechanisms respond to pressure from the international community and create intra-institutional peer pressure to act on the collectively made decisions. This study identifies these self-accountability mechanisms and explores their effects on compliance.

The Hypotheses

The study tests two hypotheses. The first hypothesis is that catalysts built into commitments should influence the summit institutions' compliance performance. It is assumed that the degree of influence would depend on the type of the catalysts. Thus, G20 and BRICS compliance is expected to increase if the G20 or BRICS acts in engagement with international organizations in a governing-in-alliance or governing-through mode.

The second hypothesis is that the urgency for the demand for collective actions would encourage implementation. Self-accountability mechanisms in response to pressure from external stakeholders and intra-institutional peer pressure to act on the collectively made decisions are expected to enhance compliance performance.

Explaining Trends in G20 and BRICS Compliance Performance

Trends in G20 and BRICS Commitments

Although the BRICS is becoming increasingly important in global governance, it made an average of 39 commitments per summit, far behind the G20's average of 168 commitments in 2008–2014 (see Figure 1). The trend for the G20 is mixed. While remaining relatively stable in 2008 and 2009, its average dropped at the 2010 Toronto Summit, but increased again at Seoul later the same year. It then almost doubled in 2011, fell in 2012, went up again in 2013 and decreased again in 2014. For the BRICS, between 2009 and 2014 the number of commitments maintained a steady, positive trend. However, at its peak of 68 in 2014 it was still almost three times lower than the G20's average.

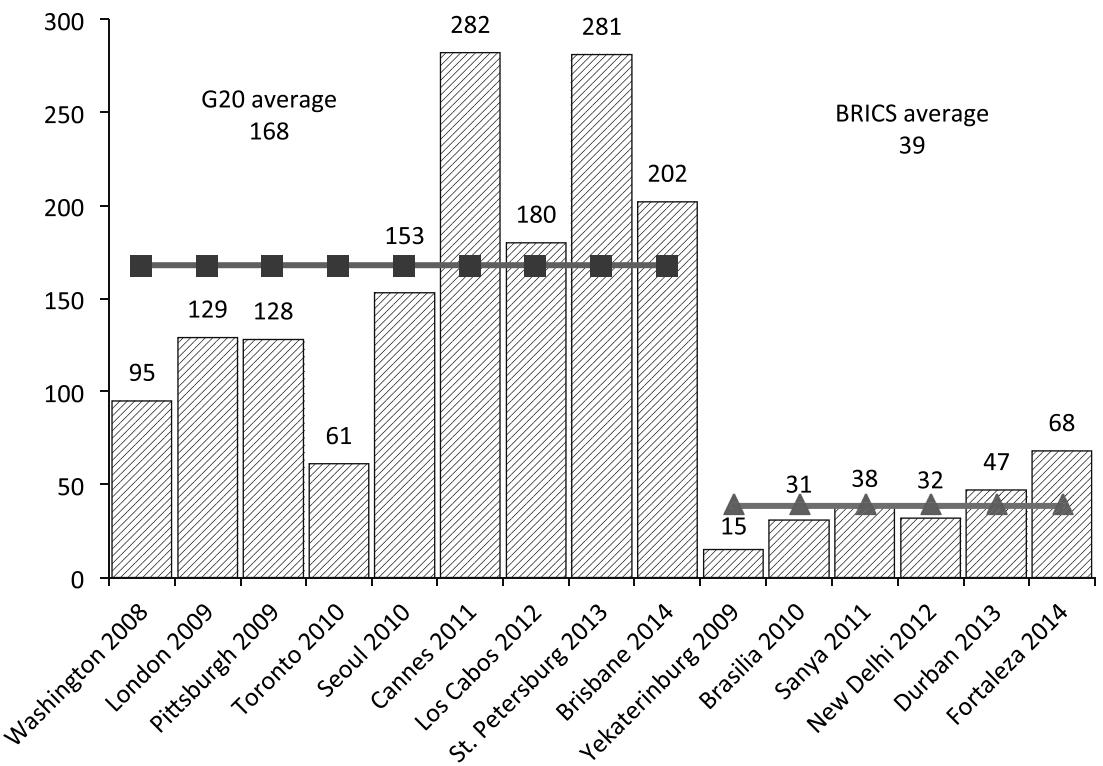

Figure 1: G20 and BRICS commitments, 2008–2014

The distribution of G20 and BRICS commitments across policy areas reflects the core missions of the institutions (see Table 1). True to its mission as the key global forum for economic cooperation, the G20 focuses on macroeconomic policy and financial regulation, including the recurring commitments on growth-friendly fiscal consolidation, flexible exchange rates, structural reforms, the Basel standards for banking capital and liquidity, over-the-counter

derivatives and systemically important financial institutions. It also consistently makes commitments on resisting protectionism in trade and investment, and reforming global financial institutions. Its commitments from other areas aim to address climate change, phase out inefficient fossil fuel subsidies, and fight crime and corruption. On development it focuses on such issues as infrastructure investment, social protection floors, food security and sustainable agriculture, remittances, and financial inclusion.

As a group of major emerging economies, the BRICS concentrates on practical cooperation and concrete measures to stimulate the economic recovery as reflected in a large share of trade and development commitments. Decisions on international cooperation and reform of international financial institutions (IFIs) each constitute about 10%, reflecting the members' desire to modernize the governance architecture to reflect the increasing weight of emerging economies in the world economy. At the same time, the priorities of each BRICS presidency substantially influence the breakdown of commitments. For instance, commitments made during the Russian presidency in 2009 focused mainly on energy and agriculture. Brasilia in 2010 retained energy issues as a priority and added development. The 2011 summit in Sanya resulted in numerous commitments on international cooperation and climate change. The 2012 New Delhi and 2013 Durban summits addressed regional security, and Durban also dealt with development issues, regional integration and infrastructure development. The 2014 Brazilian presidency focused on macroeconomic and socioeconomic issues, while also paying attention to traditional BRICS priorities, including IFI reform and international cooperation.

Table 1: G20 and BRICS Commitments by Issue Area, 2008–2014, %

Issue area	G20	BRICS
Macroeconomic policy	21.8	5.9
Financial regulation	20.7	4.0
Development	9.5	10.0
Reform of international financial institutions	8.8	9.2
Trade	7.4	10.9
Energy	5.5	11.9
Accountability	5.0	0.4
Labour and employment	4.5	
Crime and corruption	4.0	1.0
Climate change	3.0	5.3
Food and agriculture	2.9	4.5
International cooperation	1.8	10.4
Health	1.8	1.2
Infrastructure	1.8	
Socioeconomic policy	1.2	5.7
Environment	0.2	0.2
Green growth	0.2	
Regional security		7.9
Science and education		2.6

Issue area	G20	BRICS
Terrorism		2.2
Natural disasters		2.1
Culture		1.3
Human rights		1.3
Information and communication technologies		1.1
Sport		0.5
Non-proliferation		0.4
Total	100.0	100.0

Overall, although commitments on development, trade, energy, agriculture, macroeconomic policy and financial regulation are regularly made by both institutions, the G20 and BRICS each has its own core agenda, as reflected by the general breakdown of commitments. However, the distribution of commitments depends not only on the mission and capabilities of the particular institution, but also on the priorities of the presidencies and the demand for global governance.

Delivering on Commitments

The G20 compliance performance is mixed so far (see Figure 2). After the Toronto Summit, when compliance stood at a score of +0.38 (higher than +0.22 for the Pittsburgh Summit and the London results of +0.34, but lower than the Washington average of +0.59), the figure rose to +0.50 in Seoul, +0.55 in Cannes and +0.57 in Los Cabos. However, it dropped to +0.44 in St. Petersburg and further to +0.42 at Brisbane. The G20 average compliance score for all summits amounts to +0.45.

The average compliance score for BRICS (+0.41) is similar to that of the G20. However, BRICS compliance data is available only for four summits, with fluctuations in average compliance score across them, compared to data for nine G20 summits. The BRICS average was relatively high for Sanya and Durban (+0.48 for both summits), while the New Delhi figure of +0.28 was half that score, and the +0.40 registered in Fortaleza also was a drop compared to the previous summit.

Thus, despite the growing number of commitments made by the G20, its compliance performance improved by the Los Cabos Summit and remained at a relatively high level afterward. The reasons for this trend include a persistent demand for the G20 to act and for its effectiveness and legitimacy, as well as the emergence of self-accountability mechanisms. However, BRICS compliance scores fluctuate from summit to summit, which raises a question about if and how self-accountability affects performance, given that the BRICS has no self-accountability mechanisms.

Compliance by Issue Area

Given the different nature of the G20 and BRICS, priority commitments selected for assessing compliance represent different policy areas. However, the data allow comparing compliance scores in the main policy areas with the caveat that the BRICS compliance track record is shorter.

In general, delivery on commitments was higher in the areas at the core of the institutions' agenda (see Table 2). The G20 delivered better on macroeconomic and employment commit-

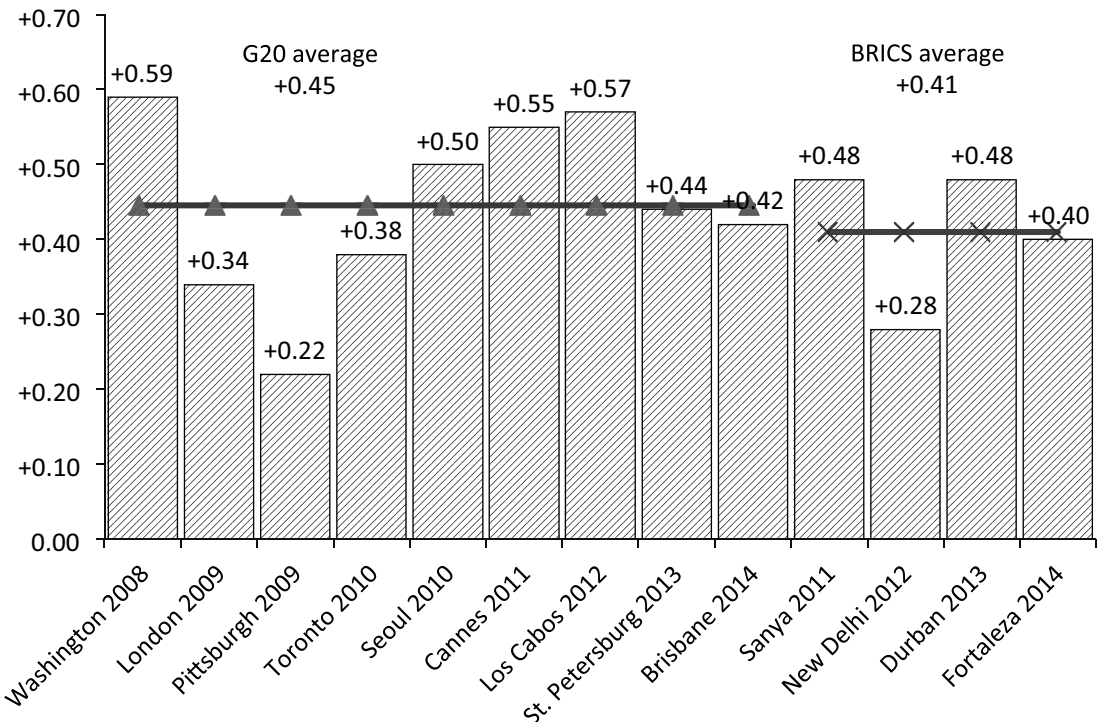

Figure 2: G20 and BRICS Compliance, 2008–2014

ments, including those related to fiscal consolidation, flexible exchange rates and policies to cut unemployment. Some commitments that were reiterated at each summit, as in the areas of trade (antiprotectionism) and development, remained largely unaddressed. The BRICS achieved moderate success in many of the policy areas examined, with the highest scores on anticorruption (strengthening international cooperation to combat bribery), development (supporting infrastructure investment and industrial development in Africa) and energy (promoting clean technologies). It had less success on trade, macroeconomic policies, IFI reform and regional security. Compliance in some areas lagged behind in both institutions. These areas include trade, where most G20 economies and all the BRICS members failed to fight protectionism successfully, and development and climate change, where progress in implementing coordinated policies was limited.

Thus, average compliance performance across issue areas is mixed for the G20 and BRICS. However, there is a common trend. Delivery on core priorities increased from summit to summit, but compliance with new commitments proved challenging, and implementing decisions that are not in line with some members' national interests, such as trade, was often poor as well.

To sum up, the analysis of compliance revealed that G20 compliance performance generally remained slightly higher than BRICS compliance performance, with the G20 averaging +0.45 over the period of 2008 to 2014 and the BRICS averaging +0.41 over the period of 2011 to 2014. Both institutions tended to agree on a growing number of commitments in different areas. Nonetheless, the G20 and the BRICS each had its own core agenda and compliance with its priority commitments was generally higher than with other commitments.

Table 2: G20 and BRICS Compliance by Issue Area

	G20										BRICS				
	Washington 2008	London 2009	Pittsburgh 2009	Toronto 2010	Seoul 2010	Cannes 2011	Los Cabos 2012	St Petersburg 2013	Brisbane 2014	Average	Sanya 2011	New Delhi 2012	Durban 2013	Fortaleza 2014	Average
Trade	+0.59	+0.50	+0.1	+0.15	−0.05	+0.50	+0.25	−0.35	+0.05	+0.19	+0.40	0	1.00	−1.00	+0.10
Development		+0.30	−0.05	+0.15	+0.60	+0.33	+0.78	+0.17	+0.13	+0.30	+0.60	+0.40	+0.60	+0.80	+0.60
Financial regulation		0	+0.15	+0.10	+0.63	+0.57	+0.46	+0.35	+0.03	+0.29	+0.40			+0.20	+0.30
Macro-economic policy		+0.43	+0.70	+0.71	+0.57	+0.44	+0.68	+0.70	0	+0.53			+0.20		+0.2
Socioeconomic policy		0			+0.90		+0.55			+0.48					
Energy			+0.75	+0.45	+0.59	+0.79	+0.58	+0.55	+0.25	+0.57		+0.60			+0.60
Crime and corruption			+0.30	−0.20	+0.45		−0.10	+0.15		+0.12				+0.80	+0.80
IFI reform			+0.05	+0.90		+0.50				+0.48	+0.20	+0.20			+0.20
Food and agriculture				+0.15		+0.95	+0.35	+0.80		+0.56					
International cooperation					+0.05	+0.25				+0.15					
Labour and employment						+0.70	+1.00	+0.85	+0.34	+0.72					
Climate change							+0.70	−0.20	0	+0.17	+0.80	+0.20			+0.50
Health									+0.58	+0.58				+0.60	+0.60
Infrastructure									+0.65	+0.65					
Regional security													+0.20	+0.20	+0.20
Terrorism													+0.40	+0.60	+0.50
Environment														+1.00	+1.00

Notes: IFI = international financial institution. Figures present average compliance scores for commitments in the particular issue area and are derived from the 2008–2014 G20 and BRICS compliance reports produced by the G20 Research Group and the BRICS Research Group.

Compliance Catalysts: Trends in G20 and BRICS Use of Catalysts

Given the difference in the total number of G20 and BRICS commitments as well as the number of commitments made at different summits, relative indicators were used for comparative analysis. Interestingly, the proportion of commitments with catalysts in G20 and BRICS discourse is reasonably similar, with 37.7% for the G20 (569 of 1,511 commitments) and 41.1% for the BRICS (95 of 231 commitments). However, the opposite trend is observed: although the proportion of G20 commitments with catalysts decreased almost constantly since the 2010 Toronto Summit and dropped to 23.8% at the 2014 Brisbane Summit, the proportion of BRICS commitments increased without interruption until the 2014 Fortaleza Summit, when it decreased slightly to 51.5%. In 2012, for the first time, the BRICS outperformed the G20 in terms of catalysts: 31.7% at the G20 Los Cabos Summit and 43.8% at the New Delhi Summit. Future trends are difficult to predict, but with the substantial proportion of commitments with catalysts made by the BRICS, it is likely to stabilize, rather than increase further.

Table 3: G20 Commitments with Catalysts

	Washington 2008	**London 2009**	**Pittsburgh 2009**	**Toronto 2010**	**Seoul 2010**	**Cannes 2011**	**Los Cabos 2012**	**St. Petersburg 2013**	**Brisbane 2014**	**Total/ Average**
With catalysts	58	56	87	30	65	86	57	82	48	569
%	61.1	43.4	68.0	49.2	42.5	30.5	31.7	29.2	23.8	37.7
Without catalysts	37	73	41	31	88	196	123	199	154	942
Total	95	129	128	61	153	282	180	281	202	1,511

The declining trend in the G20 discourse could be explained by the institution's transformation from a crisis response committee to a global governance club with an expanding agenda accommodating a wide range of issues with differing degrees of urgency and thus catalysts. The trend for the BRICS is the opposite, as the group is rapidly institutionalizing and uses newly established mechanisms to facilitate implementing its decisions by issuing mandates to internal institutions and setting timelines.

Table 4: BRICS Commitments with Catalysts

	Yekaterinburg 2009	**Brasilia 2010**	**Sanya 2011**	**New Delhi 2012**	**Durban 2013**	**Fortaleza 2014**	**Total/ Average**
With catalysts	2	8	11	14	25	35	95
%	13.3	25.8	28.9	43.8	53.2	51.5	41.1
Without catalysts	13	23	27	18	22	33	136
Total	15	31	38	32	47	68	231

G20 and BRICS commitments use different types of catalysts in ways that reflect their respective nature and features.

Cooperation with international organizations, including the intention to cooperate or statements of support, was embedded in 48.9% of G20 commitments with catalysts and 69.5% of BRICS commitments with catalysts. The most frequently mentioned international organizations include the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the Financial Stability Board, the World Trade Organization (WTO) and the World Bank. The BRICS frequently referred to the United Nations, the IMF and the G20.

The next most frequently used catalyst by the G20 was setting a timeline. Its use varied from summit to summit but the general trend descended from the peak of 62.1% at the Washington Summit. The BRICS used timelines in only 23.1% of its commitments with catalysts, with a decreasing trend after the 2009 Yekaterinburg Summit.

The G20 used priority placement more actively (21.8%) than the BRICS did (2.1%). This preference can be explained by the more G20's more complex system of documentation, which typically includes leaders' declarations, action plans and other documentation annexed to the declaration.

The BRICS used internal mandates more frequently (20%) than the G20 (13.5%). However, the BRICS issued its first mandate at the 2012 New Delhi Summit, when its institutions had sufficiently evolved, whereas the use of internal mandates is evenly distributed in G20 documents.

The G20 actively used mandates to other institutions (external mandates) from its first summit in Washington, although no new mandates related to implementation were issued at the summits in St. Petersburg and Brisbane. The BRICS issued no external mandates at all, which points to a low level of cooperation with international institutions on implementing BRICS decisions.

Only 6.3% of G20 commitments and 3.2% of BRICS commitments contain numerical targets. The G20's London Summit is remarkable because it has largest number of targets (almost 34%) in decisions on coordinating fiscal stimulus and strengthening IFI financing. The use of this catalyst later declined, with only 1.8% in Los Cabos and none in St. Petersburg.

Self-accountability catalysts were more typical for the G20, although they constitute only 2.28% of all G20 catalysts. The BRICS used these catalysts at New Delhi and Durban with the intention to review progress on the establishing the New Development Bank (NDB) and Contingent Reserve Arrangement (CRA).

Table 5: G20 Catalysts by Type

	Washington 2008	**London 2009**	**Pittsburgh 2009**	**Toronto 2010**	**Seoul 2010**	**Cannes 2011**	**Los Cabos 2012**	**St. Petersburg 2013**	**Brisbane 2014**	**Total**
International organization	18	33	35	20	29	42	24	49	28	278
%	31	58.9	40.2	66.7	44.6	48.8	42.1	59.8	58.3	48.9
Timeline	36	15	22	17	16	30	27	12	15	190
%	62.1	26.8	25.3	56.7	24.6	34.9	47.4	14.6	31.3	33.4

	Washington 2008	London 2009	Pittsburgh 2009	Toronto 2010	Seoul 2010	Cannes 2011	Los Cabos 2012	St. Petersburg 2013	Brisbane 2014	Total
Priority placement	6	11	38	1	25	13	8	16	6	124
%	10.3	19.7	43.7	3.3	38.5	15.1	14	19.5	12.5	21.8
Internal mandate	9	3	15	4	6	8	16	10	6	77
%	15.5	5.4	17.2	13.3	9.2	9.3	28.1	12.2	12.5	13.5
External mandate	9	5	11	9	7	3	2	0	0	46
%	15.5	8.9	12.6	30	10.8	3.5	3.5	0	0	8.1
Numerical target	0	19	0	0	4	10	1	0	2	36
%	0	33.9	0	0	6.2	11.6	1.8	0	4.2	6.3
Self-accountability	0	1	2	2	0	4	2	2	0	13
%	0	1.8	2.3	6. 7	0	4.7	3.5	2.4	0	2.3

Table 6: BRICS Catalysts by Type

	Yekaterinburg 2009	Brasilia 2010	Sanya 2011	New Delhi 2012	Durban 2013	Fortaleza 2014	Total
International organization	2	6	7	9	20	22	66
%	100	75	63.6	64.3	80	62.9	69.5
Internal mandate	0	0	0	4	4	11	19
%	0	0	0	28.6	16	31.4	20
Timeline	1	3	4	4	5	5	22
%	50	37.5	36.4	28.6	20	14.3	23.1
Numerical target	0	0	0	0	2	1	3
%	0	0	0	0	8	2.9	3.2
Self-accountability	0	0	0	1	2	0	3
%	0	0	0	7.1	8	0	3.2
Priority placement	0	0	0	0	1	1	2
%	0	0	0	0	4	2.9	2.1
External mandate	0	0	0	0	0	0	0
%	0	0	0	0	0	0	0

G20 catalysts are unevenly distributed by policy areas. Catalysts are used most frequently for IFI reform (81.4%), which is to be expected given the need for cooperation to attain results.

Catalysts are used often in accountability (55.6%) and international cooperation (45.7%), and less often in commitments on the core G20 agenda such as trade (39.6%), financial regulation (34.3%), macroeconomic policy (25.4%), and labour and employment (19%). Thus, the distribution of catalysts depends less on the importance of the policy area than on the possible impact of the international institution on implementation.

Table 7: G20 Catalysts by Issue Area

	Washington 2008	**London 2009**	**Pittsburgh 2009**	**Toronto 2010**	**Seoul 2010**	**Cannes 2011**	**Los Cabos 2012**	**St. Petersburg 2013**	**Brisbane 2014**	**Total**
IFI reform	14	29	11	4	16	22	8	5	4	113
With catalysts	14	23	8	4	14	18	6	3	2	92
%	100	79.3	72.7	100	87.5	81.8	75	60	50	81.4
Climate change	0	3	3	3	8	8	4	11	7	47
With catalysts	0	1	3	1	3	4	3	6	6	27
%	0	33.3	100	33.3	37.5	50	75	54.5	85.7	57.4
Accountability	4	3	15	2	4	5	13	9	17	72
With catalysts	2	3	15	1	1	2	10	2	4	40
%	50	100	100	50	25	40	76.9	22.2	23.5	55.6
Crime and corruption	3	0	3	3	8	5	7	34	4	67
With catalysts	1	0	2	3	2	5	3	16	0	32
%	0	0	66.7	100	25	100	42.9	47.1	0	47.8
International cooperation	0	0	4	0	2	12	5	12	0	35
With catalysts	0	0	4	0	0	4	2	6	0	16
%	0	0	100	0	0	0	40	0	0	45.7
Energy	0	0	16	1	14	18	10	19	16	94
With catalysts	0	0	10	1	6	7	2	10	3	39
%	0	0	62.5	100	42.9	38.9	20	52.6	18.8	41.5
Trade	5	14	6	9	17	15	9	12	9	96
With catalysts	4	4	4	6	5	6	2	4	3	38
%	80	28.6	66.7	66.7	29.4	40	22.2	33.3	33.3	39.6
Development	4	15	9	8	22	17	10	50	11	146
With catalysts	2	9	6	4	9	2	2	16	2	52
%	50	60	66.7	50	40.9	11.8	20	32	18.2	35.6
Financial regulation	59	45	23	12	24	38	18	21	11	251
With catalysts	29	5	10	7	8	8	11	4	4	86

	Washington 2008	London 2009	Pittsburgh 2009	Toronto 2010	Seoul 2010	Cannes 2011	Los Cabos 2012	St. Petersburg 2013	Brisbane 2014	Total
%	49.2	11.1	43.5	58.3	33.3	21.1	61.1	19.0	36.4	34.3
Socioeconomic policy	0	1	1	2	6	2	3	0	0	15
With catalysts	0	1	1	1	0	2	0	0	0	5
%	0	100	100	50	0	100	0	0	0	33.3
Food and agriculture	0	0	3	2	2	36	4	11	0	58
With catalysts	0	0	3	0	1	9	2	2	0	17
%	0	0	100	0	50	25	50	18.2	0	29.3
Macroeconomic policy	6	15	28	15	28	91	67	67	41	358
With catalysts	6	9	19	2	16	17	12	6	4	91
%	100	60	67.9	13.3	57.1	18.7	17.9	9	9.8	25.4
Labour and employment	0	4	6	0	0	8	18	29	18	84
With catalysts	0	1	2	0	0	2	1	6	4	16
%	0	25	33.3	0.0	0	25.0	5.6	20.7	22.2	19

Note: IFI = international financial institution.

Because there is a relatively low number of BRICS commitments with catalysts, it is not possible to analyze the distribution by policy areas. Catalysts were most frequently used on IFI reform (87.5%), terrorism (66.7%), climate change (58.3%), development (56.5%), international cooperation (56%) and regional security (40%). However, the trend across summits is quite mixed.

In conclusion, the evolving institutionality of the BRICS was accompanied by a rise in the use of commitment catalysts, which mostly included references to international institutions, internal mandates and timelines. The same three types of catalysts were prioritized in G20 documents, although the G20's use of commitment catalysts declined.

Compliance Catalysts: How They Work or Do Not Work

Two subsets of commitments with and without embedded catalysts were compared to assess whether commitment catalysts affect compliance performance.

Compliance assessments are available for 114 G20 commitments made from 2008 to 2014 (see Table 8). The number of monitored commitments increased steadily, with only three analyzed in the 2008 Washington Summit compliance report and 16 to 17 commitments assessed for each summit after Cannes in 2011 to Brisbane in 2014.

Catalysts were built into all three commitments assessed for Washington. For London, the number of commitments with catalysts included in the compliance assessment dropped to two. Eight of nine Pittsburgh commitments monitored contained catalysts. After the Toronto Sum-

mit, the number of monitored commitments with catalysts remained relatively stable at about 30% of all commitments assessed.

Table 8: G20 Commitments, Compliance Assessments and Monitored Commitments with Catalysts, 2008–2014

Summit	Washington 2008	London 2009	Pittsburgh 2009	Toronto 2010	Seoul 2010	Cannes 2011	Los Cabos 2012	St. Petersburg 2013	Brisbane 2014	Total/Average
Commitments	95	129	128	61	153	282	180	281	202	1,511
Monitored commitments	3	13	9	10	13	16	17	16	17	114
Monitored commitments with catalysts	3	2	8	5	5	5	4	6	5	43
%	100	15.4	88.9	50	38.5	31.3	23.5	37.5	29.4	37.7

For the BRICS, of the 23 commitments assessed in the compliance reports from 2009 to 2014, 10 contained catalysts (see Table 9). Only one of the five commitments monitored for the Sanya Summit had embedded catalysts. Between 2012 and 2014, about a half the monitored commitments included catalysts.

Table 9: BRICS Commitments, Compliance Assessments and Monitored Commitments with Catalysts, 2009–2014

Summit	Yekaterinburg 2009	Brasilia 2010	Sanya 2011	New Delhi 2012	Durban 2013	Fortaleza 2014	Total/Average
Commitments	15	31	38	32	47	68	231
Monitored commitments	0	0	5	5	5	8	23
Monitored commitments with catalysts	0	0	1	3	2	4	10
%	n/a	n/a	20	60	40	50	43.48

Note: n/a = not applicable

A comparison of the commitments with and without embedded catalysts reveals that the average compliance score for those with catalysts was lower than those without catalysts for six out the eight G20 summits assessed (see Table 10). Commitments with catalysts registered slightly higher compliance scores only in Toronto and Cannes. The gap between commitments with and without catalysts widened after the Los Cabos Summit. As a result, the average compliance score for commitments with catalysts amounted to +0.31, the average for all commitments was +0.43 and the average for commitments without catalysts was +0.49.

Table 10: G20 Compliance Assessments, 2008–2014

Summit	Washington 2008	London 2009	Pittsburgh 2009	Toronto 2010	Seoul 2010	Cannes 2011	Los Cabos 2012	St. Petersburg 2013	Brisbane 2014	Total/ Average
Monitored commitments	3	13	9	10	13	16	17	16	17	114
Average score	+0.59	+0.34	+0.22	+0.38	+0.5	+0.55	+0.57	+0.44	+0.25	+0.43
Monitored commitments with catalysts	3	2	8	5	5	5	4	6	5	43
Average score	+0.59	+0.25	+0.16	+0.39	+0.45	+0.57	+0.43	+0.04	−0.11	+0.31
Monitored commitments without catalysts	0	11	1	5	8	11	13	10	12	71
Average score	n/a	+0.36	+0.38	+0.37	+0.57	+0.54	+0.62	+0.68	+0.40	+0.49

Note: n/a = not applicable

The trend is similar for the BRICS (see Table 11). The average compliance score on commitments with catalysts was +0.40, which is slightly lower than the average compliance for all commitments (+0.41) and for commitments without catalysts (+0.46). The score for commitments with catalysts was higher than the figure for the other commitments at the Sanya and Durban summits, but substantially lower for New Delhi and Fortaleza.

Table 11: BRICS Compliance Assessments, 2011–2014

Summit	Sanya 2011	New Delhi 2012	Durban 2013	For-taleza 2014	Total/ Average
Monitored commitments	5	5	5	8	23
Average score	+0.48	+0.28	+0.48	+0.40	+0.41
Monitored commitments with catalysts	1	3	2	4	10
Average score	+0.60	+0.20	+0.50	+0.30	+0.40
Monitored commitments without catalysts	4	2	3	4	13
Average score	+0.45	+0.40	+0.47	+0.50	+0.46

According to a comparison of the G20's compliance scores for commitments with and without catalysts, catalysts encouraged compliance on only the three issue areas of trade, food and agriculture, and international cooperation (see Table 12). In the other seven issue areas for which scores were available for both subsets of commitments, the G20 generally performed better on commitments without catalysts. Average compliance performance on issue areas where all commitments assessed do not contain catalysts (health and infrastructure) was relatively high (+0.58 and +0.65, respectively). Compliance scores on crime and corruption and on IFI reform, with catalysts in all monitored commitments, lag behind (at +0.12 and +0.48, respectively).

Table 12: G20 Compliance Performance by Issue Area, 2008–2014

	Washington 2008	London 2009	Pittsburgh 2009	Toronto 2010	Seoul 2010	Cannes 2011	Los Cabos 2012	St. Peters-burg 2013	Brisbane 2014	Average
Without catalysts										
Trade		+0.50			−0.05		+0.25		+0.05	+0.19
Development		+0.30		+0.15	+0.60	+0.33	+0.78	+0.38	+0.13	+0.38
Macroeconomic policy		+0.43		+0.73	+0.89	+0.44	+0.68	+0.70	+0.05	+0.56
Financial regulation		0		+0.10	+0.67	+0.57	+0.15		+0.30	+0.30
Energy			+0.75		+0.80	+0.95			+0.85	+0.84
Labour and employment						+0.70	+1.00	+0.85	+0.45	+0.75
International cooperation					+0.05					+0.05
Climate change							+0.70			+0.70
Food and agriculture				+0.15			+0.35	+0.80		+0.43
Socioeconomic policy					+0.90		+0.55			+0.73
Health									+0.58	+0.58
Infrastructure									+0.65	+0.65
With catalysts										
Trade	+0.59	+0.50	+0.10	+0.15		+0.50		−0.35		+0.25
Development			−0.05					−0.25		−0.15
Macroeconomic policies			+0.70	+0.67	+0.25				−0.05	+0.39
Financial regulation			+0.15		+0.60		+0.61	+0.35	−0.25	+0.29
Energy				+0.45	+0.37	+0.63	+0.58	+0.55	−0.35	+0.37
Labour and employment									+0.11	+0.11
International cooperation						+0.25				+0.25
Climate change								−0.20	0	−0.10
Food and agriculture						+0.95				+0.95
Socioeconomic policy		0								0
Crime and corruption			+0.30	−0.20	+0.45		−0.10	+0.15		+0.12
IFI reform			+0.05	+0.90		+0.50				+0.48

Note: IFI = international financial institution.

The BRICS complied equally well on commitments with and without catalysts in the areas of development and IFI reform (see Table 13). On trade, commitments without catalysts received a higher compliance score (+0.40) than those with catalysts (0). However, as the data on

BRICS compliance are limited to four summits, further research is needed to make convincing conclusions on BRICS comparative performance across the two subsets.

Table 13: BRICS Compliance Performance by Issue Areas, 2011–2014

	With catalysts	**Without catalysts**
Development	+0.60	+0.60
Reform of international financial institutions	+0.20	+0.20
Trade	0	+0.40
Crime and corruption	+0.80	
Terrorism	+0.50	
Environment		+1.00
Energy		+0.60
Health		+0.60
Climate change		+0.50
Financial regulation		+0.30
Macroeconomic policies		+0.20
Regional security		+0.20

In summary, on average G20 and BRICS compliance performance was higher on commitments without catalysts than on those with catalysts. This finding applied to both the comparison across summits and across issue areas. Thus, catalysts on compliance performance had a mainly negative impact on the G20 and the BRICS.

However, the degree and direction of this influence depended on the type of catalyst. The G20 generally demonstrated good performance on commitments containing self-accountability pledges (with an average score of +0.55 for this set of commitments, compared to the overall average of +0.45) (see Table 14). Commitments with timelines also registered relatively high compliance scores, with the average of +0.34 (however, it is lower than the overall average score for the institution). By contrast, results for commitments with numerical targets were negative, with an average of −0.07. Ambitious numerical targets are evidently harder to comply with and can take some time to be achieved, while compliance cycle (from summit to summit) is relatively short.

Compliance scores on commitments with priority placements and mandates were also lower than the overall G20 average. With an average score of +0.28, engagement with international organizations cited in the G20 commitments failed to contribute much to compliance.

Although BRICS compliance scores are only available for ten commitments with catalysts, comparison of the findings leads to the same conclusions as for the G20 (see Table 15). The effect of timelines seems positive (it should be noted, however, that the score of +0.80 represents a single assessed commitment to accelerate attaining the education-related Millennium Development Goals by 2015). BRICS compliance on commitments that reflect engagement with international organizations was +0.29, almost equal to the G20 score and lower than the BRICS overall score of +0.41.

Table 14: G20 Compliance on Commitments by Catalyst Type

Catalyst type	Number of commitments	Number of commitments assessed	Compliance score
Priority placement	124	10	+0.21
Numerical target	36	2	−0.07
Timeline	190	16	+0.34
Self-accountability mechanisms	13	3	+0.55
External mandate	46	0	n/a
Internal mandate	77	1	+0.25
Engagement with international organizations	278	18	+0.28

Note: n/a = not applicable

Table 15: BRICS Compliance on Commitments by Catalyst Type

Catalyst type	Number of commitments	Number of commitments assessed	Compliance score
Priority placement	2	0	n/a
Numerical target	3	0	n/a
Timeline	17	1	+0.80
Self-accountability mechanisms	3	0	n/a
External mandate	0	0	n/a
Internal mandate	19	0	n/a
Engagement with international organizations	66	9	+0.29

Note: n/a = not applicable

Thus, the study reveals that catalysts built into commitments affect G20 and BRICS compliance performance, although in most cases the impact is negative. The degree of influence according to type of catalyst has also turned out to be valid. Self-accountability pledges and timelines embedded in commitments tend to influence performance positively (or at least neutrally), whereas compliance on commitments with other types of catalysts is lower than average. This is true for engagement with international organizations. Thus, the findings do not confirm the hypothesis that G20 and BRICS compliance would increase if the institutions engage with international organizations in a governing-in-alliance or a governing-through mode.

Further research is needed, however, given the limitations of the existing database. Future compliance studies may generate new data with more attention given to a balanced representation of commitments with and without catalysts. Future monitoring studies might also take into account the fact that commitments with catalysts, especially numerical targets, are assessed according to very rigorous scoring guidelines, reflecting their ambitious nature. This is not to say that the rigour should be relaxed but that there should be an awareness of the contradiction

between the ambitious and long-term nature of commitments and the relatively short assessment period in designing the methodology.

External Causes of Compliance: Empowering Implementation

Two clear trends emerge in the study of G20 and BRICS discourse: the proportion of commitments responding to demand for G20 collective action to resolve urgent challenges (priority) declines, while the number of self-accountability commitments related to G20 performance rises (see Figure 3). The demand for the BRICS actions in also generally falling with a slight spike observed at New Delhi and Durban, whereas the self-accountability mechanisms are nascent. For both the G20 and the BRICS the average compliance with priority commitments is higher than the average for the rest of the sample.

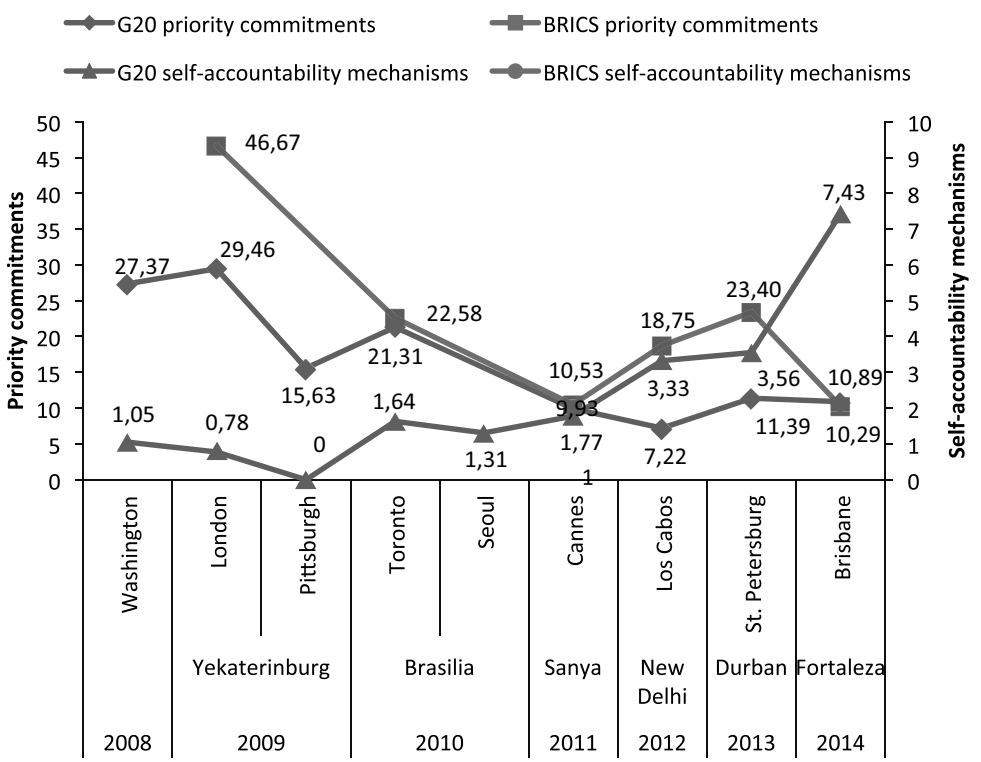

Figure 3: G20 and BRICS Priority and Self-Accountability Commitments, 2008–2014

Washington and London had the highest share of priority commitments with 27.4% and 29.5% of the total respectively. At Washington the leaders pledged to restore growth, ensure closer macroeconomic cooperation, stabilize the financial system, strengthen the transparency and efficiency of financial markets, work together to enhance regulatory cooperation among jurisdictions, refrain from raising new barriers to trade and investment, advance the reform of the Bretton Woods institutions, and ensure that the IMF, World Bank and other multilateral development banks have sufficient resources to help overcome the crisis. Since Washington both commitment catalysts and self-accountability commitments have been present in the G20

discourse. The most frequently used type of catalyst was the timeline. However, of the total 95 pledges only one was a self-accountability commitment: given the prominence of reforming the financial system on the G20 agenda, the leaders agreed to meet again to review implementation by 30 April 2009. The main compliance catalyst for the Washington commitments was a shared sense of the need for collective and coordinated action, as confirmed by compliance performance with the pledge to reject protectionism reaching +0.59, a success in the area not yet repeated in the history of G20 since then.

The London Summit resulted in the leaders' agreement to triple the IMF resources to $750 billion; support a new allocation of $250 billion for special drawing rights, $100 billion in additional lending by the multilateral development banks, $250 billion for trade finance and IMF gold sales for concessional finance for the poorest countries; and undertake a concerted fiscal expansion amounting to $5 trillion to save jobs and raise output by 4%. They also agreed to establish the new Financial Stability Board as a successor to the Financial Stability Forum and implement the package of IMF quota and voice reforms agreed in April 2008 and the World Bank reforms agreed in October 2008. Many of the 129 commitments were reinforced by numerical targets and timelines. One self-accountability commitment contained the decision "to meet again before the end of this year to review progress on our commitments" [G20, 2009].

Even though the urgency for collective action was acutely felt in March 2009, the average compliance performance with the London commitments was low. Two factors explain this outcome. One factor was the multitude of numerical targets, which was a unique feature of the London commitments, made them harder to comply with. The other factor was the compliance period between the London and Pittsburgh summits was too short to allow for the full range of necessary actions. A good example is the commitment to reshape the regulatory systems so that authorities can identify and assess macroprudential risks, which received a score of 0 as a work in progress. Despite these factors, compliance performance with the priority commitments (+0.37) was significantly higher than compliance with the rest of the sample for London (+0.28). This is characteristic of G20 compliance for the period as the club average compliance with priority commitments was +0.49 compared to +0.40 on other commitments. The outlier was G20 performance on Pittsburgh decisions.

The G20's failure to comply with the Pittsburgh priority commitments (+0.04 compared to +0.37 for the other commitments) marks a drop in the members' performance on their pledge to refrain from raising barriers to investment and trade in goods and services, as well as imposing new export restrictions or implementing WTO-inconsistent measures to stimulate exports and rectify such measures as they arise. With an average of +0.10 for Pittsburgh, the G20 did not return to the level it sustained for Washington (+0.59) and London (+0.50). The commitment to shift at least 5% of the IMF quota share of overrepresented countries to dynamic emerging markets and developing countries proved a challenge that the G20 was not able to resolve even seven summits later. Only two of 128 Pittsburgh commitments were reinforced by self-accountability catalysts: the decision to rationalize and phase out inefficient fossil fuel subsidies, which encourage wasteful consumption, over the medium term and the promise to facilitate the conclusion of the WTO's Doha Development Round and trade facilitation agreement. Moreover, Pittsburgh was the only summit that made no self-accountability commitments. The lowest compliance in G20 history can be explained by a combination of a diminishing sense of urgency, a wide range of challenging commitments and a lack of self-accountability mechanisms.

At the Toronto Summit, for the first time the G20 leaders expressed their determination to be accountable for the commitments they made, and instructed their ministers and officials to take all necessary steps to implement them fully within agreed timelines. Nonetheless, compliance performance was only slightly higher than for Pittsburgh. However, delivery on priority

commitments (+0.50) was much higher than the average for the other commitments (+0.33), with two exceptions: the commitment to avoid protectionism and the promise to implement country-specific strategies to rationalize and phase out inefficient fossil fuel subsidies over the medium term. The Toronto Summit was the first held in the G20's new capacity as the premier forum for its members' international economic cooperation, and the leaders were gravely aware that to sustain recovery, they needed to follow through on their macroeconomic policy decisions on fiscal stimulus and "growth friendly" fiscal consolidation plans in advanced countries and on structural reforms across the entire G20 membership. This new impetus for continued cooperation to strengthen the recovery and lay the foundation for strong, sustainable and balanced growth encouraged implementation with the priority commitments.

The Seoul Summit, remarkable for the Seoul Development Consensus and Multi-Year Action Plan on Development as well as the focus on the structural reforms, consolidated the self-accountability dimension of G20 cooperation as the leaders reaffirmed that the G20 would hold itself accountable for its commitments. A significant rise in the average compliance performance for Seoul commitments (+0.50) came as the result of the combination of the members' resolution to implement collective and individual commitments to advance strong, sustainable and balance growth stated in the action plan and burgeoning self-accountability mechanisms responding to peer pressure and demand for G20 effectiveness from external stakeholders. The leaders promised: "We will continue to monitor and assess ongoing implementation of the commitments made today and in the past in a transparent and objective way. We hold ourselves accountable. What we promise, we will deliver" [G20, 2010a]. Performance on the priority commitments was contradictory. On the one hand, the G20 resolution to implement structural reforms to boost and sustain global demand, foster job creation, contribute to global rebalancing, and increase growth potential was confirmed by very high compliance on the commitment to address bottlenecks and enhance growth potential through investment in infrastructure (+0.90). On the other hand, the G20 again failed to deliver on the anti-protectionist standstill commitments (−0.05). The increase in delivery rested on a shared sense of urgency and peer pressure.

At the Cannes Summit, the G20 focused on providing more and better jobs as the ultimate objective of the action plan to address short-term vulnerabilities and strengthen medium-term foundations for growth. The G20 also further consolidated its self-accountability mechanisms. Members agreed to enhance reporting and monitoring in 2012 and in future years, developing a framework to assess progress on the commitments for reforming fiscal, financial, structural, monetary, exchange rate, trade and development policies. The average compliance performance for Cannes reaching +0.55 with an average of +0.49 for the priority commitments. However, the G20 delivered well on several key priority commitments; the promise to renew efforts to combat unemployment and promote decent jobs, especially for youth and others most affected by the economic crisis, was implemented by most members and scored +0.7. The G20's relatively high performance (+0.5) with the commitment to refrain from protectionism and to roll back any new protectionist measures — traditionally hard to comply with — is an example of how persistent demand for action and accountability mechanisms can act together to catalyze compliance.

Under the Mexican presidency, the G20 put employment at the heart of its macroeconomic policies, fully complying with the commitment to combat unemployment through appropriate labour market measures and foster the creation of decent work and quality jobs. G20 members reported on their progress on their individual policy commitments and adopted an accountability assessment framework [G20, 2012a, b]. They also promised to review progress against all of the commitments at their next summit in St. Petersburg, thus further consolidat-

ing the peer pressure and transparency mechanisms. The 180 Los Cabos commitments were reinforced by eight self-accountability pledges. The average level of compliance (+0.57) was the highest since Washington, with the average for priority commitments reaching +0.61.

The St. Petersburg Summit resulted in 281 commitments, second only to Cannes. In their declaration and the action plan, the leaders agreed to improve domestic and international investment conditions, improve the business environment, implement pro-growth structural reforms in product and labour markets, and develop comprehensive growth strategies and country-specific plans on employment. The growth strategies and employment plans were developed and adopted at the Brisbane Summit the following year. The G20 emphasized encouraging the private sector, including small and medium-sized enterprises as one of the most important partners, in fostering inclusive economic growth for job creation. The commitment to improve the business environment was fully implemented by all members. The average level of compliance with the priority commitments at +0.58 was much higher than for the rest of the sample (+0.36). Two exceptions should be noted here. One was the modest delivery on the promise to tackle tax avoidance, harmful practices and aggressive tax planning, which, at +0.35, was lower than expected given the prominence of the issue on the St. Petersburg agenda and the priority of improving the business environment and building inclusive societies. The other exception was the pledge to extend the standstill commitment until the end of 2016, so the regularly low performance to resist protectionism dropped to −0.35, the lowest to date. The ten self-accountability commitments with timelines were intended to advance progress on a wide range of G20 decisions.

The key takeaways from the Brisbane Summit included the commitment that the members' employment plans should work alongside their comprehensive growth strategies to integrate macroeconomic and labour market policies more effectively. The leaders agreed to lift the G20's gross domestic product (GDP) by at least an additional 2% by 2018. Mindful of the global impact of their collective actions, G20 leaders promised that their decisions would boost non-G20 GDP by more than 0.5% by 2018. Through the Global Infrastructure Initiative, endorsed at the summit, the G20 aimed to increase quality public and private infrastructure investment and agreed to establish the Global Infrastructure Hub with a four-year mandate to support the implementation of the initiative. For the first time in the G20's history the leaders not only expressed disappointment with the continued delay in the IMF quota and governance reforms agreed in 2010 and the 15th General Review of Quotas, including a new quota formula, but also asked the IMF to stand ready with options for next steps, if the United Stated failed to ratify the reforms by the end of the year. The leaders promised to hold each other to account for implementing their commitments and to review progress at their next meeting. The 15 accountability commitments were intended to reinforce compliance and ultimately enhance G20 effectiveness. Self-accountability commitments present in the G20 since the first summit in Washington were transformed into a full-fledged and comprehensive mechanism.

Turkey's G20 presidency in 2015 listed its core priorities as investment for growth, inclusive development and implementation of commitments. At the Antalya Summit, the leaders reiterated their Brisbane pledge to increase their collective GDP by an additional 2% by 2018 through growth strategies adjusted in response to evolving economic conditions and ambitious country-specific investment strategies. G20 members agreed to monitor implementation closely through the robust framework developed with support of the OECD, IMF and the World Bank. The leaders made 113 commitments, 13 of which were in the Statement on the Fight Against Terrorism adopted in the aftermath of the terrorist attacks in Paris on 13 November on the eve of the summit. The leaders reiterated their resolve to work together to prevent and suppress terrorist acts through increased international solidarity and cooperation, in full recognition of the UN's

central role and in accordance with the UN Charter and obligations under international law. The accountability commitments were intended for monitoring the implementation of growth strategies and employment plans and progress on resisting protectionist measures. At the time of writing compliance data on Antalya commitments was still being analyzed, but it can be assumed that the shared sense of urgency for collective actions and the accountability framework will likely encourage compliance performance.

Thus the main compliance catalysts for Washington and London were the shared sense of urgency for collective and coordinated actions. In spite of the Pittsburgh breakthroughs on the Framework for Strong, Sustainable and Balanced Growth and the establishment of the G20 as a premier forum for its members' economic cooperation, compliance was the lowest in G20 history, which may be explained by the summit fatigue, abating sense of urgency for the collective actions, and absence of self-accountability pledges. From Toronto onward the G20 shaped and consolidated self-accountability mechanisms. An increase in the compliance performance for Toronto resulted from a combined effect of two factors: responding to demand for coordinated actions and enhancing self-accountability. Although the compliance performance on the Seoul and Cannes priority commitments was lower than for the other commitments, the upward trend in average performance remained steady, reflecting the institution's increasing capability of delivery reinforced by self-accountability mechanisms. Los Cabos continued the trend and demonstrated higher compliance performance with the priority commitments. The average level of compliance with the St. Petersburg commitments dropped slightly, but the average for priority commitments was second only to Los Cabos and Cannes.

To sum up, the G20's shared sense of urgency and systemic self-accountability encouraged implementation. These two factors do not have a linear or universal effect, but they may complement and reinforce each other. As the G20 becomes increasingly institutionalized, implementation becomes a value, if not a norm, with self-accountability acting as a safeguard for delivery.

The decline in priority commitments is also characteristic for the BRICS, with its share amounting to 46.7% in Yekaterinburg (2009), where the leaders committed to advance IFI reform, support the diversification of energy resources and supply, and contribute to the efforts to overcome the global food crisis. The proportion of priority commitments fell to 22.6% in Brasilia (2010) and 10.5% in Sanya (2010). At both summits, the BRIC leaders emphasized their commitment to resist protectionism, promote the reform of the Bretton Woods institutions, and develop cleaner, more affordable and sustainable energy systems (South Africa was not yet a member). At Sanya they agreed to support infrastructure development in Africa and its industrialization within the framework of the New Partnership for Africa's Development (NEPAD). Sanya's average compliance score was +0.48, higher than average for the period under study. At Sanya the leaders made their first and only self-accountability commitment, pledging to review the implementation of their action plan at their next meeting.

The downward trend in priority commitments was reversed at New Delhi (2012) and Durban (2013) with the decisions to establish the NDB for mobilizing resources for infrastructure and sustainable development projects in BRICS members and other emerging economies and developing countries and to establish the CRA with an initial size of $100 billion. At New Delhi, the BRICS leaders requested their finance ministers to examine the feasibility of setting up a development bank and report back by the next summit. At Durban they commended the finance ministers and central bank governors for their work on the NDB and the CRA and promised to review progress on these two initiatives at the next meeting in September 2013. But they made no commitments to review the implementation of the other pledges. For both summits, compliance with the priority commitments was higher than for the rest of the commitments.

The difference for the New Delhi Summit was not significant at +0.27 compared to +0.30, but for the Durban Summit it was substantial at +0.45 compared to +0.60.

The primary achievements of the Fortaleza Summit (2014) were the finalization of the decisions on the New Development Bank and the CRA. Separate documents were also issued: the Agreement on the New Development Bank, spelling out the articles of operations, and the Treaty for the Establishment of a BRICS Contingent Reserve Arrangement, setting out the terms and conditions of the CRA. Other priorities included the leaders' agreement to promote social development and contribute to defining the international agenda in this area, building on the BRICS experience in addressing the challenges of poverty and inequality. Several commitments on development were made, including the promise to work toward an inclusive, transparent and participative intergovernmental process for building a universal and integrated development agenda to eradicate poverty, and a more concrete commitment to accelerate progress in attaining the Education for All goals and education-related Millennium Development Goals by 2015. The BRICS also stressed that the development agenda beyond 2015 should build on these goals to ensure equitable, inclusive and quality education and lifelong learning for all. Given the damage done to sustainable development and economic growth by tax evasion, transnational fraud and aggressive tax planning, the BRICS affirmed their commitment to cooperate on issues related to tax administration and in international forums targeting tax base erosion and information exchange for tax purposes. However, there were no self-accountability commitments at the Fortaleza Summit. At +0.80, the average compliance with the priority commitments was significantly higher than the average for the rest of the commitments at +0.34.

The 2015 Ufa Summit marked beginning of the NDB and CRA operations. The leaders expressed their expectation that the NDB would approve its inaugural investment projects in early 2016. In the Strategy for BRICS Economic Partnership, the leaders directed their relevant ministries and agencies to take practical steps for efficient implementation and to assess the feasibility of developing a roadmap for BRICS trade, economic and investment cooperation for the period until 2020. They confirmed their commitment to the post-2015 Sustainable Development Goals and to South-South cooperation. For the first time in many years, the leaders' declaration made pledges on health. BRICS members agreed to work together in such areas as managing the risks related to emerging infectious diseases with pandemic potential and eradicating communicable diseases such as HIV/AIDS, tuberculosis, malaria, neglected tropical diseases, poliomyelitis and measles. The summit documents contained 130 commitments, the highest number of commitments in BRICS history, and 17 mandates for their implementation. Two mandates possessed accountability features: the sherpas were requested to report annually on the implementation of the BRICS Strategy for Economic Partnership and to review the BRICS Strategy every five years, or earlier if deemed necessary. These emerging accountability mechanisms and the repetition of commitments made at the ministerial level in the leaders' declaration can be expected to improve BRICS compliance performance. Thus there is a clear trend for higher compliance BRICS performance with priority commitments. Obviously in the absence of self-accountability mechanisms, the shared sense of urgency for collective and coordinated actions remains the main catalyst for compliance performance.

Conclusion

The research findings of this study do not support the conclusion that catalysts in commitments positively influence the compliance performance of the G20 or BRICS summit institution. On average, compliance performance on commitments without catalysts was higher both for institutions. Self-accountability is the only type of catalyst that exerted a positive effect. Timelines

have no pronounced influence. Neither internal nor external mandates improved compliance performance. Engagement with international organizations also failed to improve compliance. Numerical targets had a negative impact. Hence, the analysis does not confirm the hypothesis that catalysts affect compliance performance. However, the evidence base confirms that the degree of influence depends on the type of the catalysts. It refutes the assumption that engagement with international organizations in a governing-in-alliance or a governing-through mode has a catalytic effect on G20 and BRICS compliance.

The analysis confirms the conclusion that a shared sense of urgency for collective action and systemic self-accountability mechanisms encourage implementation. Both factors are present in the G20 performance, where two opposite trends are observed: a decline in the proportion of commitments made in response to demand for G20 collective action to resolve urgent challenges and a rise in the proportion of self-accountability commitments related to G20 performance. For the BRICS, the main catalyst is a shared awareness of the demand for collective action

These two factors do not have a linear or universal effect, but they may complement and reinforce each other. As the G20 becomes increasingly institutionalized, implementation becomes a value, if not a norm, with self-accountability a safeguard for delivery.

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