China & the Emerging Geopolitical Dimension of Technical Standardization

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Defining the technical standards of future industries is a high-stakes process, and one that increasingly runs the risk of falling afoul of international power politics. Standardization has traditionally been thought of as an obscure, apolitical, industry-driven practice of defining technical specifications or processes to improve the quality, security, or compatibility of goods and services. China's rise and its deepening strategic competition with the United States are changing the seemingly benign features of this process. As China becomes an ever more potent force in shaping international technical standards due to its improving capacity to innovate, geopolitical tensions are likely to impede more and more upon the standard-setting space. The implications for the future structure of the global economy are great, particularly as the Covid-19 crisis offers fertile ground for significant, even fundamental changes.

Why Technical Standards Are Significant

The story of globalization is in many ways a story of standardization. Indeed, technical standards form a kind of common language that allow products or services from different producers to be compatible with one another, providing a crucial baseline for connectivity across markets – think, for instance, of the dimensions of shipping containers, of GSM for telecommunications or of WiFi for wireless Internet.

At the same time, there are fundamentally competitive features to standardization. In particular, defining technical standards can have significant implications for which technologies will dominate future markets and offers considerable advantages to those who master standardized technologies. Indeed, "standards wars" were a common feature of telecoms markets from the 1980s through much of the 2000s. In many instances, switching from one technical standard to another does not incur significant costs on a producer (for instance, in adapting to the shape of electrical sockets in different regions of the world). For others, however, as was the case with telecoms historically, high switching costs make standards a potentially make-or-break issue for producers that base their products on one technical standard over another. It is on this concept that Werner von Siemens reportedly opined in the late 1800s that "he who owns the standards, owns the market."

For many standards, particularly those that define information and communications technologies, there can also be political implications. Differences between WiFi and WAPI standards for wireless Internet offer one example. WiFi (ISO/IEC 8802-11 or IEEE 802.11) was adopted as an international standard in the early 2000s and offers users a large degree of freedom and anonymity. Meanwhile, the WAPI standard, which is China's national standard and was proposed as an alternative to WiFi but failed to gain international adoption, is designed to allow service providers and governments a greater capacity of surveillance and control. Similar interpretations have also been given on proposals to redefine Internet Protocol (IP) standards. The current IP standard that is the basic feature of today's Internet is thought to be unfit for the needs of the future highly-connected, data-driven societies, but concerns are now swirling around proposals presented by China's Huawei for a "New IP", which would effectively allow for higher levels of surveillance and control over user activities and upend many of the principles of freedom and openness that defined the Internet at its creation.

Scene Setters: Shifting Balance of Power & Technological Revolution

Underlying the economic and political implications that are inherent in the development of certain technical standards, two fundamental transformations in the international system are converging to raise the stakes even further.

The first transformation is geopolitical. The emergence of China as an economic, diplomatic and military power both regionally and globally has upended the US-dominated international order. This raises questions about how China will seek to challenge, transform or integrate the existing order of international political and economic systems. Will it seek to become a "responsible stakeholder" in the existing global architecture, to adapt the rules of existing institutions to better accommodate Chinese interests, or to create a competing set of institutions and operational norms? So far, the answer seems to be "all of the above", including in the standardization space. The main goal of the Chinese authorities – or the so-called party-state – is to establish China as a premier global power by whatever means necessary, securing the legitimacy of the ruling Chinese Communist Party. This geopolitical transformation has also been tinged with ideological differences and diverging visions of how politics and the economy should interact – on the nature of state-society relations, and on the role of the state in the economy.

The second transformation is technological. The so-called Fourth

Industrial Revolution is slated to transform societies in rather fundamental ways through the fusion of digital and physical worlds. Technologies and processes such as artificial intelligence (AI), the Internet of Things (IoT), 3D printing and quantum computing are not only expected to transform industry and the nature of work, but the ways in which humans and technology interact on a daily basis, from smart cities to autonomous vehicles and beyond.

Competing over leadership in these industries of the future is where the first and second transformations meet, particularly with regards to the US and China, or the rise of so-called "techno-nationalism". Standards will play an important role in defining how the industries of the future work together, both across product fields and across borders. The degree to which technical standards are harmonized or diverge will determine the trajectory of globalization and the degree to which markets can be connected.

From Standards Taker to Standards Maker

Understanding China's emergence in the standards development space, its goals for standardization, and how it interacts with existing international standardization processes is key to considering the trajectory of future markets.

Historically, China has been on the receiving end of international standards, particularly in industries where it has sought to integrate with international markets and value chains. Alternatively, it has used the development of its own domestic standards as a means of protecting its own industries, though its accession to the World Trade Organization has largely limited the scope of these practices. China's priorities have been shifting. Over much of the last decade, Chinese policymakers and strategists have become acutely aware of the relationship between technical standards and economic power. A popular saying in China explains that "third-tier companies make products, second-tier companies make technology, first-tier companies make standards."

Indeed, boosting the capacity of Chinese firms to develop competitive technical standards is an integral part of Chinese industrial strategies, from Made in China 2025 to Internet Plus to its strategy on AI. As the innovative capacity of Chinese industries grows, so too does their ability and ambition to shape standards for the industries of the future. The performance of firms such as Huawei and ZTE in shaping 5G telecom standards bears witness to this, but the phenomenon is much more broad-reaching. From emerging technological fields such as AI, IoT, blockchain, quantum computing, biotechnology and smart cities to more traditional sectors including railways, energy, agriculture and health care, China is proactive in virtually every area where technical standards remain to be developed and set.

China's aim of becoming a first-tier, innovation-driven economy is now evident, but it still faces many challenges, including in the field of standardization. In 2015, China's State Council highlighted a broad range of deficiencies in the way standards are set in the country and launched a long-term process of reform. So far, this process has given birth to a new standardization law as of January 2018 and a solidifying debate over what China's standardization strategy should prioritize toward the horizon of 2035. What is clear is the desire to highlight the use of standards not only to improve the daily lives of Chinese citizens, but to boost innovation, facilitate China's economic transformation toward the industries of the future, and turn China into a leading power in international technical standards development.

More Political Model of Standardization

In essence, Chinese policymakers increasingly look to standardization as a means to facilitate its industrial policy goals and, more broadly, to decrease its technological vulnerabilities, increase its autonomy and broaden the scope of its national power. It is precisely this strategic policy dimension of standardization, and the role that China's party-state plays in the development of standards that represents a major shift in the global technical standards landscape.

The predominant models of standards development have traditionally been market and industry driven. In the European model, for instance, industry actors coordinate within the scope of independent, non-governmental standards development organizations (SDOs) at the national (DIN for Germany, AFNOR for France, BSI for the United Kingdom, etc.) and the European level (CEN, CENELEC). These organizations then participate in and largely give hierarchical precedence to standards developed within the scope of international SDOs, such as the International Organization of Standardization (ISO) and the International Electrotechnical Commission (IEC). The American model is also industry-driven, but with a much less centralized, hierarchical structure. Here, more than 600 largely industry-driven associations (ASME, IEEE, ASTM, SAE) develop standards for their respective fields. American interests are then much more loosely represented at the international level through the American National Standards Institute. Despite the differences between the US and European models for standards development, which themselves can be a source of friction, the existing system is built around a general principle of private self-regulation.

China's model, on the other hand, is one that is driven by state policy and strategic industrial and political goals. The Standardization Administration of China, which is tasked with coordinating national

standardization efforts and representing China at the international level, is under the direct authority of the State Administration for Market Regulation, which itself is an arm of the State Council. At the operational level, various ministries, for instance the Ministry of Industry and Information Technology, the Ministry of Environment and Ecology, or the Ministry of Railways, in addition to relevant firms, organize standards development plans for a broad range of sectors and technologies through in-house research institutes. While reform efforts have sought to insert a dimension of market competition into China's standardization landscape (through so-called "association standards"), the state remains the dominant and decisive actor. As such, China's standardization strategies are not only driven by technical and business considerations, but also by national political and strategic priorities.

Engagement with International Standards Development Organizations

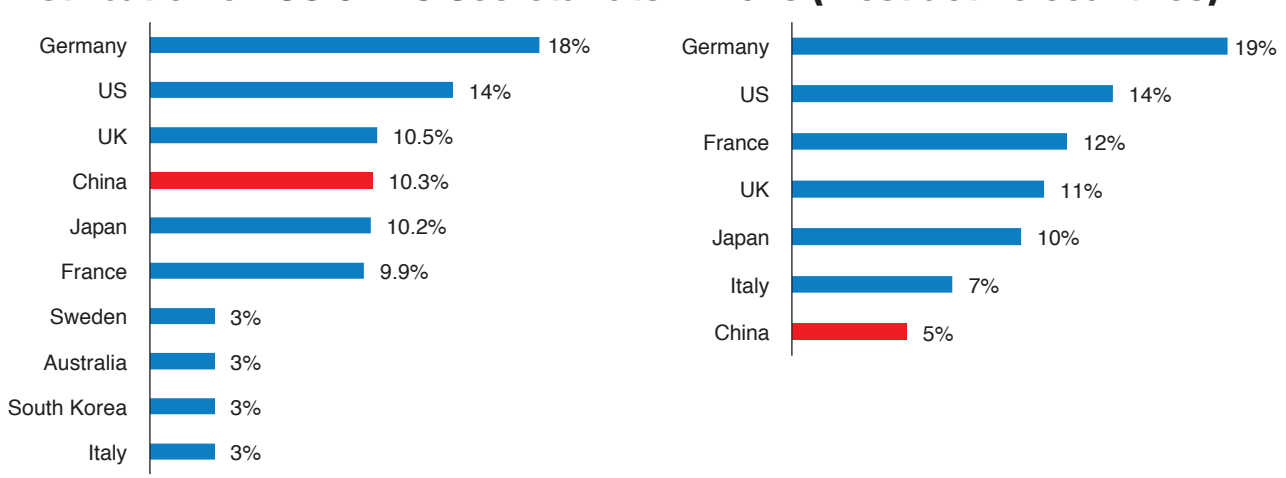
As China increasingly looks to become a premier purveyor of international technical standards, how it chooses to interact with established processes for defining international standards is a critical marker for the future of global standards development. So far, China seems to be playing a two-track game of engaging with and integrating established SDOs, on the one hand, and developing a parallel, China-centered track for standards development and diffusion on the other.

First, on the cooperative dimension. While China is a latecomer to international standard setting and has faced an uphill battle in shaping the development of this space, it has nonetheless moved hard and fast to engage with and integrate organizations such as the ISO, the IEC and the International Telecommunications Union (ITU). This has taken place both at the leadership level – with Chinese nationals serving at the heads of the ISO (2015-2018), the IEC (since 2020) and the ITU (2015-2023) – and at the expert level. Indeed, Chinese representation in technical committees has grown exponentially over the last decade. It now boasts the third-highest level of participation in ISO technical committees (behind France and the UK) and second in those of the IEC (behind Germany). It has also steadily taken on secretariat roles in technical committees in both organizations, with 79 in the ISO (of which 10 are twinned) and 10 in the IEC as of 2019. While its comparative level of secretariats doesn't appear particularly revolutionary, it must be remembered that China's concerted engagement in the organizations only began in earnest from around 2007 *(Chart)*.

Beyond these classical SDOs, Chinese industries have also proactively engaged with the broad range of standard-setting industry associations. The development of 5G telecom standards, notably but not exclusively within the 3rd Generation Partnership Project, has often been hailed as a successful example of collaboration over competition, and it is one in which China, and namely telecom giant Huawei, has been exceedingly successful in leading. Despite the example of success in 5G, China's learning curve in these organizations has been steep and not always successful. Nevertheless, its efforts appear to be bearing fruit in areas where its industries have a competitive edge. In 2018, for instance, China-based Wuxi IoT Research Institute succeeded in passing a reference

CHART

Distribution of ISO & IEC Secretariats in 2018 (most active countries)



Source: John Seaman, "China and the New Geopolitics of Technical Standardization", Note de l'Ifri, Ifri, January 2020, p.21.

architecture for the IoT (ISO/IEC 30141), one of five China-proposed standards on the IoT that have been adopted by the body.

China's Parallel Tracks to International Standards Diffusion

At the same time, in parallel to the multilateral track of cooperative international standards development, China has also pursued a more China-centered track. This involves primarily two dimensions: first, promoting "mutual recognition" of standards at the bilateral level with a large and growing number of countries and, secondly, advancing the Belt and Road Initiative (BRI), a cornerstone of China's foreign policy strategy, as a platform for international standards cooperation.

China's bilateral approach, sometimes referred to outside China as "multi-bilateralism" so as to highlight the contrast with traditional multilateralism, favors China's asymmetric market advantage over individual partners and is oriented differently depending on the partner. With advanced economies, such as France or Germany, China seeks to reap the benefits of technical cooperation – for instance technology and knowledge transfer – in emerging fields such as electric vehicles or smart cities. With many developing countries, the partnerships are more squarely oriented toward facilitating the diffusion of Chinese standards, for instance in high-speed rail, that will expedite investment and market entry for Chinese firms.

It is the incorporation of standards "cooperation" within the framework of the BRI that is of particular interest and concern, however. To date, China has officially registered 90 cooperation agreements with 52 countries under the auspices of the BRI, though so far there is much doubt about the operational utility of many of these agreements. What is more concerning is the overall policy dimension. Two "action plans" for standards and the BRI have so far been developed, for the periods of 2015-2017 and 2018-2020 and extend to fields well beyond the initial, infrastructure-oriented scope of the BRI, to include telecommunications, energy, transportation, civil aviation, smart cities, e-commerce, agriculture, environmental protection, development assistance, accounting, healthcare services and more. Indeed, while there is debate over how the scope of the BRI will be impacted by the Covid-19 crisis, it is shaping up to a platform from which China will seek to enhance its so-called "connectivity power" and extend its regional and extra-regional influence, including through the "harmonization", or diffusion of technical standards.

Toward Standards Fragmentation & Another Step Toward Decoupling?

In light of the state-centered, policy-driven nature of technical standardization in China, Beijing's dual-track approach to international standards cooperation presents two answers to the question of how it will seek to shape the international system.

China's efforts to integrate the established system of standardization, on the one hand, reflects a tendency in favor of more cooperative frameworks. Certainly, a major aim of this is to shape the standards development process to best suit China's interests – this should not be overlooked and this alone adds a distinct flavor of power politics to standard setting. Yet, it is an approach that offers space for cooperation and interaction in a multilateral framework. The parallel track, on the other hand, based on bilateralism and the development of the BRI, while couched in a language of cooperation and harmonization, is one that more overtly seeks to recreate international standardization processes in a way that will more directly benefit China and facilitate the emergence of a more China-centric economic order. It represents the risk of a deeper fragmentation of international standards regimes.

These parallel, competing tendencies reflect similar, competing pressures facing the global economy more broadly, with protectionism and rising techno-nationalism pushing back against a new potential wave of technologically-driven globalization. The deepening of strategic competition between China and the US, particularly in the technological sphere, is clearly exacerbating these tensions. There has been much talk in recent years, in Beijing, in Washington, and further afield, about a longer-term push toward disentangling the interdependencies that characterize the global economy today, often referred to as "decoupling". While the fog of the Covid-19 crisis seems far from lifting, it already seems increasingly clear that the prospect of a more cooperative future based on robust and broad multilateral cooperation is unlikely – or at least not one that involves the US and China. Rather, the "post-Covid-19 world" appears to be leaning toward one in which power politics will be an increasingly structural feature.

In light of these shifts, the degree of fragmentation in the technical standards space will provide an important gauge of how deeply fragmented international economic and political systems will be in the future. At the same time, proactive engagement in the more multilateral, cooperative dimensions of this space from all stakeholders will be necessary to head off the worst-case scenarios.

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