Securing Global Standards for Innovation and Growth

Sujai Shivakumar
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Standards are indispensable to innovation, providing shared platforms for industry participants to work together to bring new technological solutions to the marketplace. Securing the integrity of fair and broad-based frameworks that establish accurate and workable standards for technology adoption and interoperability is therefore critical to accelerate innovation and promote fair global competition in all fields essential to commerce.

At the same time, the development and adoption of one set of standards over another can confer differential advantages to particular firms and national economies. For some technologies, the selection of a given standard can often determine whose product will succeed in global markets. As explained in a recent Wall Street Journal article, "[w]hoever has control of industrial norms for telecommunications, electricity transmission and artificial intelligence is in a position to dominate." Alternatively, doubts about the fairness and quality of standards or a bifurcation in the framework within which standards are developed can disrupt technological development and can negatively impact innovation-driven improvements in consumer welfare and economic growth.

In this regard, statements and actions from the People's Republic of China over the past decade are concerning. They signal a determined intention to strengthen China's participation in global standardization organizations with an eye to gaining a competitive advantage for Chinese companies in a broad range of emerging technologies. Such plans may disadvantage the competitive position of China's commercial and strategic competitors, but they will also damage networks of cooperation spanning national and global innovation ecosystems, creating a negative-sum game. A recent United States Trade Representative (USTR) report on unfair trade practices identifies China's priorities to acquire foreign technology and intellectual property with a focus on next-generation artificial intelligence, information and communications technologies, electronics, advanced manufacturing, and industrial robotics.

To sustain the broad benefits of innovation, the United States must take active steps to maintain a unified, global, and rules-based system for standards. First, the U.S. should consistently promote strong and coherent policies that uphold the integrity of intellectual property rights. Second, it should bolster its own public and private sector participation in international standards-setting bodies. Third, the United States should foster cooperation with its allies and strategic partners in governing the flow of knowledge and sensitive technologies. Fourth, the United States must more effectively coordinate standardization strategy between the private and public sectors, prepare the next generation of standards leaders, and incentivize private sector engagement in standardization investment in order to benefit the U.S. economy and trade.

The Importance of International Standards for Innovation

Innovation is a complex activity requiring coordination across a multiplicity of actors. For scientists and engineers, being able to understand a common technical vocabulary and measurement standards facilitates teamwork in research across industry and academia. For firms, following established practices and shared standards helps them save on development and production costs. Furthermore, the presence of clear and technically coherent international standards increases the interoperability and market size of these firms' products, creating potentially higher returns on new technologies. Standards enable entrepreneurial firms to introduce their products into markets dominated by legacy providers. Industries use standardized processes and specifications to ensure that firms can work together seamlessly across technological platforms and national borders. By allowing platform technologies developed by one firm to easily work with products designed by other companies, standards allow products to be designed and produced at scale at different locations and marketed worldwide. And for consumers, standards help make products user-friendly, safe, and trustworthy. Moreover, new service providers or manufacturers entering a defined market with innovative products, standards can stimulate beneficial price and quality competition.

Standards emerge from a variety of sources. In some cases, private companies propose standards to participants of international standards development organizations (SDOs), hoping to gain significant economic benefits from developing, owning and licensing the rights to a standard. Firms collaborate with industry players internationally to develop and ultimately adopt standards that are created through the coordinated technical efforts of national and international standards organizations.

A universal rules-based framework for standards provides the coordination essential for firms to participate in networks of cooperation and competition found in the research, development, production, and marketing of innovative products and services. They facilitate access to global markets, providing firms the advantages of scale economies. In turn, these advantages encourage firms to participate in and align their technology with international standards—creating a virtuous cycle. A case in point is the positive contributions of standards to the development of the wireless industry, as documented in a recent ITIF report.

Coherent international standards also encourage regulators and governments to improve trade policies and develop better regulations. Standards developed in a process consistent with the World Trade Organization's Technical Barriers to Trade Agreement, for example, foster trade by providing firms across the global manufacturing chain the confidence that product and testing requirements have global relevance and are accepted worldwide.

With the strong lead that U.S. companies enjoyed as technology innovators through much of the twentieth century and beyond, the United States has led the way in creating and setting international standards for a variety of modern technologies. Active participation in international standards organizations allowed the U.S. to promote a private-sector led and consensus-driven process to creating and promulgating new standards that set an active pace for innovation—one that benefitted the United States and the rest of the world. The policy of the United States regarding the role of government in the standards process is outlined in OMB Circular A-119.

The landscape of standardization is now challenged as China has invested heavily and incentivized action throughout its nation, seeking to exert more influence over the development and use of

technology standards, raising important questions about its impact on the broader networks of innovation, competition, trade, and security.

China's Growing Influence in Technology Standards

Chinese policymakers often invoke the perspective that third-tier companies make products, second-tier companies design technology, and first-tier companies set standards. They understand the strategic importance of foundational standards and are working to influence the development and deployment of standards in key sectors for the global economy and trade. A 2015 article in China's Zhejiang Daily states, "Standards are the commanding heights, discourse power, and the power to control. The one who obtains the standards gains the world." This rhetoric emphasizes the value placed on standards for establishing China's technological position in a variety of emerging domains.

China's determination to dominate standards extends to the goal of controlling communications and discourse. In a reference to internet governance and standards, Chinese President Xi has stated that in cyber security and telecommunications, the "game of great powers is not only a game of technology but also a game of ideas and discourse power." Developing standards for the digital economy therefore also includes reference to standards for political expression.

These ambitions are reflected in the proposed China Standards 2035 plan. This plan complements the earlier *Made in China 2025* strategy, which invested heavily in developing and manufacturing technologies such as 5G, connected devices, and industrial automation. It also sought to establish China's lead in areas such as in autonomous systems, batteries, solar cells and other green technologies.

China's standards strategy also seeks to influence the direction of licensing fees. At present, China is the world's second largest payer of licensing fees in the world since most proprietary standards in the technology industry are currently created by foreign companies. China Standards 2035 seeks to reverse this relationship and make China a net recipient of licensing fees for Standard Essential Patents (SEPs).

To ensure that China will be positioned to dominate the market for emerging technologies, the 2035 standards strategy seeks to increase the quantity of Chinese-owned intellectual properties that are identified as SEPs, and to have Chinese technical inputs influence the setting of international standards, and to favor the commercial interests of Chinese enterprises. The plan calls for creating new domestic standardization research institutes, certification centers, and more than fifty "standards innovation bases." The strategy also features new prizes and subsidies to encourage Chinese researchers and companies to cooperate in developing new China-based standards.

China has also sought to increase Chinese representation in leadership and rapporteur positions at top SDO's, such as the International Telecommunications Union, raising concerns about the integrity of standards-setting. Analysis by experts at CSIS points out that "China sends the largest delegation to the ITU's various study groups and is also represented by Huawei and other state-owned enterprises that are members. Working through these study groups, with the support of high-level ITU leadership, Huawei has introduced some 2,000 new standard proposals to ITU study groups on topics including 5G, cybersecurity, and artificial intelligence."

However, the broader evidence to date shows that despite the rapidly rising influence of Chinese firms, the U.S. continues to maintain its leadership position in international standard setting organizations. Analysis by the Atlantic Council reports that the United States holds "at least 50 percent of votes in eleven of the thirty-nine standards development organizations." In the IEEE Standards Association, for instance, 67 percent of the Standards Board members, who ultimately approve IEEE standards, are American. It also found that these SDO's are structurally sound and have been able to withstand pressure from individual governments in the past.

Although the United States continues to exert influence within international standards development, recent assertive actions taken by China provide cause for concern. While it is reasonable to expect technology leaders to be active in setting standards, China's standards strategy does not appear to be designed to enhance innovation commons but rather to differentially privilege domestic companies such as Huawei over its global competitors. By politicizing SDO's, China may further damage the bodies' role in establishing fair and credible standards that serve as reliable platforms for further technical advances and market competition.

Given the scale and ambitions of China Standards 2035, we need to respond to its implications for the development and promulgation of technical standards. The full implications of China's standards strategy—much less a comprehensive response— have yet to be mapped out in full. Simply attempting to limit Chinese participation in global standards organizations may accelerate the trend of bifurcation or China-led and China-only standards, which could set back progress in technological innovation, limit the welfare of consumers, and unfairly disadvantage the competitive position of U.S. firms.

Policy Recommendations

The United States must continue to play an active leadership role in international standards setting to ensure the effective and fair functioning of the global standardization system. Our policy recommendations focus on the following pillars:

1. **Promote Strong Intellectual Property Rights (IPRs)** – Clear and enforceable Intellectual Property Rights (IPRs) provide incentives to corporations and entrepreneurs to invest in research and development, participate in standardization activities, and contribute their advanced technologies to the process of defining global standards. The "Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments" issued in December 2019 by the USPTO, NIST and the DOJ Antitrust Division further clarified the U.S. position on the importance of balance in IP rights and the availability of injunctive relief, which provide economic opportunities for the owners of SEPs to gain a return on investment from their R&D. This policy must be upheld to benefit intellectual property transactions involving SEPs in the U.S. and internationally.

Strong and enforceable IPRs are important to avoid the potential for misuse of information obtained during the technical exchange process that is an essential part of standards development negotiations.

The United States must maintain a coherent policy regarding intellectual property rights. For example, the President's Executive Order on Promoting Competition in the American Economy,

despite its very good intentions, includes provisions that would increase ambiguity regarding IP protections, reduce the value of intellectual property and SEP rights for U.S. entrepreneurs and innovators, and reduce incentives for U.S. corporations and other inventors to invest and participate in international technology standardization.

2. **Advance and enforce sound governance principles** – The principles of standards development governance have been well defined by the American National Standards Institute (ANSI) in its global role on behalf of the U.S. private sector-led standardization process. Consistently maintaining a rules-based ecosystem in all standards bodies around the world, where U.S. corporations can compete on a fair and level playing field with companies and government bodies of other nations is essential. By maintaining transparent and fair governance principles, attempted manipulations of standards processes by the Chinese government and Chinese corporations will be exposed, providing opportunities for the governments, corporations, and standards organizations to be held accountable in international fora.

3. **Multilateral cooperation** – The United States and other nations are increasingly aware of the intent and the actions China is taking to seek dominance in standards. China has learned well from the strategies of nations in standards organizations around the world and has been able to flood standards bodies through leadership representation, technical contributions, and submissions of patents for consideration as "standards essential." The data available to the U.S. and our trading partners, including China, must inform ongoing bilateral and multilateral cooperation in trade policies relevant to keeping the manipulative standards practices of China in check.

4. **Effective coordination** – Together with the private sector, the National Institute of Standards and Technology has a pivotal role to play in the coordination of U.S. government agency participation in standardization. The active involvement of NIST and U.S. government representatives in preparing for standards negotiations as well as in standards committees and working groups is most welcome by U.S. and international industry collaborators. The indispensable role of NIST in standards coordination must, however, be accompanied by appropriate funding for technical preparation, coordination and participation. Through NIST participation, the nation receives the benefits of effective, technologically sound representation and coordinated public-private sector engagement.

The National Science and Technology Council (NSTC) Subcommittee on Standards requires strong leadership by NIST and the active engagement of all federal agencies. This subcommittee and its private sector engagement must further establish effective communications, planning, and coordination with all U.S. private participants in standardization.

5. **Building America's capacity for standards leadership** – The U.S. provides essentially no support for standards literacy in higher education. Since 2010, NIST has provided less than $500K per year to support standards education and capacity development. By contrast, over the past decade, China has invested substantially in its educational system to assure public and private sector preparedness in standards. China has come to understand that a nation both educated and equipped for standards excellence can ultimately win in securing technology advances and trade advantage. The United States must also come to this realization. China has become a role model for the U.S. regarding standards education and preparedness. This nation must invest strategically in the future

leaders that will advance curriculum, prepare a standards-savvy workforce, and conduct standards-related research and standards leadership development at universities across America. Investment in standards leadership is an investment in American competitiveness. Furthermore, permitting recipients of federal research grants to use a portion of these funds for participation in standards activities, including committee assignments and technical contributions, would benefit U.S. competitiveness.

6. **Incentivizing U.S. industry investments for standards leadership** – A redefinition of the R&E Tax Credit is required to address systemic barriers to innovation and standards leadership in the 21st Century economy. U.S. industry will not invest in standardization aligned with the U.S. national interests without direct incentives and alignment opportunities to do so. The redefinition of the R&E Tax Credit must be structured to incentivize greater participation in standards development by U.S. industry in all sectors relevant to the global economy and to U.S. competitiveness.