



ROUNDTABLE DISCUSSION

INNOVATION: COMPARING CHINA WITH THE US AND EUROPE

LEAD SPEAKER



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MODERATOR



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CONTENTS

The Panellists	3
Biographical Note	6
Key Takeaways	7
Report	10
Image Gallery	25
Institutional Profile	27

The Panel

Speaker: Dr. Alicia García-Herrero, Senior Fellow, Bruegel; Chief Economist, Asia Pacific, Natixis, Hong Kong; Adjunct Professor, Hong Kong University of Science and Technology (HKUST); and Non-Resident Fellow, Institute of Chinese Studies, New Delhi

Moderator: Prof. Biswajit Dhar, Distinguished Professor, Council for Social Development, New Delhi; Advisor, Asia-Pacific Research and Training Network on Trade of the UN Economic and Social Commission for Asia and the Pacific; and Honorary Fellow, Institute of Chinese Studies, New Delhi

Participants

Mr. Ravi Bhoothalingam, Convenor; Emeritus Fellow, Institute of Chinese Studies, New Delhi; Founder and Chairman, Manas Advisory; and, Fellow, Royal Geographical Society, London

Prof. Alka Acharya, Director, Institute of Chinese Studies, New Delhi; and, Chairperson & Professor, Centre for East Asian Studies, School of International Studies, Jawaharlal Nehru University, New Delhi

Mr. K.N. Srivastava, Retd. Indian Administrative Service; and Director, India International Centre, New Delhi

Mr. Saugata Bhattacharya, Member, Monetary Policy Committee, Reserve Bank of India; and, Senior Fellow, Centre for Policy Research, New Delhi

Amb. Shivshankar Menon, Indian Diplomat; former National Security Advisor; former Foreign Secretary; Visiting Professor, Ashoka University, India; Chair, Ashoka Centre for China Studies, Ashoka University; and Advisory Board, Institute of Chinese Studies, New Delhi

Prof. Sreemati Chakrabarti, Chairperson, Institute of Chinese Studies; and, Former Professor of Chinese Studies, Department of East Asian Studies, University of Delhi

Prof. Patricia Uberoi, Emeritus Fellow, Institute of Chinese Studies, New Delhi; and, former Professor of Social Change and Development at the Institute of Economic Growth, Delhi

Prof. Manoranjan Mohanty, Distinguished Professor, Council for Social Development, New Delhi; and, Emeritus Fellow, Institute of Chinese Studies, New Delhi.

Prof. Suma Athreye, Faculty, School of Public Policy, Indian Institute of Technology, Delhi; Area Editor, Journal of International Business Policy

Dr. Sanjaya Baru, Founder-Trustee, Forum for National Security Studies; and Distinguished Fellow, United Services Institution of India and Centre for Air Power Studies, New Delhi

Dr. Santosh Mehrotra, Research Fellow, IZA Institute of Labour Economics, Bonn, Germany; and, Visiting Professor, Centre for Development Studies, University of Bath, United Kingdom

Prof. Sabaree Mitra, Professor, Centre for Chinese and South East Asian Studies, School of Language, Literature and Culture Studies, Jawaharlal Nehru University, New Delhi; and, Honorary Fellow, Institute of Chinese Studies, New Delhi

Prof. Yinghong Huang, Professor, Jindal Global Law School, O.P. Jindal Global University, Sonapat, Haryana

Cmde C. Uday Bhaskar, Director, Society for Policy Studies, New Delhi

Suhasini Haidar, Journalist and National Editor, *The Hindu*

Dr. Satyaki Roy, Associate Professor, Institute for Studies in Industrial Development

Dr. Ritu Agarwal, Associate Professor, Centre for East Asian Studies, School of International Studies, Jawaharlal Nehru University, New Delhi; and, Honorary Fellow, Institute of Chinese Studies, New Delhi.

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Dr. Raviprasad Narayanan, Associate Professor, Centre for East Asian Studies, School of International Studies, Jawaharlal Nehru University, New Delhi; and, Adjunct Fellow, Institute of Chinese Studies, New Delhi.

Dr. Veda Vaidyanathan, Associate Fellow, Centre for Social and Economic Progress, New Delhi; and, Visiting Associate Fellow, Institute of Chinese Studies, New Delhi

Snigdha Konkar, Research Associate and Assistant Director, Institute of Chinese Studies, New Delhi

Mr. Prithvi Raj Singh, Administrative and Programme Officer, Institute of Chinese Studies, New Delhi

Ram Singh Bisht, Staff, Institute of Chinese Studies, New Delhi

Akshat Mayne, Research Assistant, Institute of Chinese Studies, New Delhi

Manikaran Singh Chagger, Rapporteur; and, Research Intern, Institute of Chinese Studies, New Delhi

Biographical Note



Dr. Alicia García-Herrero is the Chief Economist for Asia Pacific at Natixis CIB. She also serves as Senior Fellow at the European think-tank BRUEGEL and as a non-resident Senior Fellow at the East Asian Institute (EAI) of the National University Singapore (NUS). She is also an Adjunct Professor at the Hong Kong University of Science and Technology (HKUST). Dr. Alicia García Herrero is also an independent Board Member of AGEAS insurance group. Finally, Alicia serves as an advisor to the Spanish government on economic affairs, a Member of the Board of the Center for Asia-Pacific Resilience and Innovation (CAPRI), a member of the Advisory Board of the Berlin-based Mercator Institute for China Studies (MERICS), an advisor to the Hong Kong Monetary Authority's research arm (HKIMR) and a Member of the Council of the Focused Ultrasound Foundation (FUF). Dr. García-Herrero holds a PhD in Economics from George Washington University and has published extensively in refereed journals and books.



Prof. Biswajit Dhar is a Distinguished Professor, Council for Social Development, New Delhi and serves as an advisor to the Asia-Pacific Research and Training Network on Trade of the UN Economic and Social Commission for Asia and the Pacific. He is on the Board of the Inter-University Centre for IPR Studies of the Government of Kerala. He was a Professor at the Centre for Economic Studies and Planning at Jawaharlal Nehru University, New Delhi, and has served as the Director General of the Research and Information System for Developing Countries (RIS), a think-tank of the Ministry of External Affairs. Professor Dhar interacts closely with several inter-governmental organisations. He has publications in reputed national, and international journals and is a regular columnist in several national dailies.

Key Takeaways

The round table explored the current standing of the United States, China, and the European Union in critical technologies, like AI, quantum computing, and semiconductors, which have become foundational technologies and are crucial for economic security. It delved into radical innovations, spillovers from innovations, and companies dominating in each field of critical technologies, as well as India's standing in the same. In her first opening presentation, Dr. Alicia García-Herrero highlighted the following:

- India's trade and manufacturing data show a conundrum. While India needs higher manufacturing to provide much-needed jobs, it has a low backward participation in global trade and high intermediate goods tariffs. These data, when viewed by any foreign investor, negatively affect their opinion about India's potential for investment in manufacturing at the moment. Furthermore, India's share of manufacturing as a percentage of its GDP is falling, and its share of global exports has stagnated.
- India-China economic entanglements and their prospects were discussed. It was highlighted that in economic terms, China has the upper hand over India in short term. However, in the long run, India has the upper hand, and China also needs India's market access for its future. Furthermore, Indian and Chinese economies are projected to reach similar levels around the middle of the twenty-first century.

In her second presentation, Dr. García-Herrero highlighted

- The US is aiming to maintain its dominance over critical technologies and is employing various means to restrict the diffusion of its innovations and technologies to other countries.
- While the US currently leads in the three focused critical technologies, namely AI, quantum computing, and semiconductors, China has already started overtaking the US in radical innovations in some of the subsectors of these technologies. The EU even though has some radical innovations but lags behind its two counterparts. The analysis of companies from the three economies also reveals interesting data about their radical innovations and their prowess in the respective fields.

- In the case of spillovers of innovations¹, China leads in the spillovers across different countries and also has considerable leeway in spillover time within its economy. The US is also competitive in the spillover of innovations. However, the EU considerably lags behind.

The discussion that followed can be categorised into three broad areas:

Discussions on Innovation, Its Ecosystem and Implications

- A discussion on the institutions leading the R&D— private or public— and their role in the R&D ecosystem in various economies, including India. What can be done to rectify the “foundational problem” in India’s R&D ecosystem, and is it right to call it so?
- What are the advantages of large economies like the US and China in the innovation and imitation ecosystem? What is the extent of dependence of the quality of the ecosystem on the quality ladder of imitators, as opposed to innovators? How were spillovers measured to understand the methodology of the research?
- The impact of migration on the transfer of technologies? What and why is Europe “handicapped” in this area? How is the technology transfer through migration changing in contemporary times? Furthermore, how are the export controls being implemented to hinder technology diffusion in a targeted way?

Discussions on India, China and their Future

- How are India’s FDI policies framed with respect to China? What are the sentiments about them in China? What are the effects of innovation in developing societies such as India and China? How do they differ from their developed counterparts? A comparison of Indian and Chinese GDP, GDP per capita and contribution to global growth in the past, present, and future were discussed.

¹ Technological or innovation spillovers refer to the diffusion of technological knowledge and innovations beyond the original source or developer, leading to benefits or advantages for other individuals, firms, industries, or countries that did not directly invest in the development of that technology.

- How is the growth trajectory of India and China different? How do the investment and innovation in China and India operate broadly and differently?

Discussions on the Competition between the US and China

- The competition between China and the US in contemporary times is intensifying. Will China overtake the US or dominate in countering its hegemony in the future? How is China adapting to the current system, which is predominantly US-led?
- Where does Europe stand today in this competition for technology? While the US and China are taking steps to protect their technologies, how long can Europe maintain its openness in this field?

Dr. García-Herrero's assessment highlighted the peculiarities of the innovation ecosystem in contemporary times. The individual economies are trying to protect their ecosystems and their technologies to maintain their advantage or gain some advantage. Yet, she pointed out that despite these attempts, the diffusion of technologies and innovation will not stop.

On India, she opined that India needs to provide a level playing field for its manufacturing sector and economy. Furthermore, India needs to do a comprehensive review of where it stands in the current innovation ecosystem and then act on the findings. India cannot bear to be left out in this race of critical technologies. If India gets left out or gets excessively reliant, it might suffer in the future.

Report

Critical technologies, like AI, quantum computing, and semiconductors, are key both as foundational technologies to develop others and also for economic security. How do the United States, China, and the EU fare in such critical technologies, focusing on radical innovation? What is the extent and speed of spillovers, and which are the companies that dominate in each field? What are the lessons here for India's strategies for its own innovation and economic security? To explore these issues in depth, a round table titled, *Innovation: Comparing China with the US and Europe*, was held on 17 March 2025. It was organised by the Institute of Chinese Studies (ICS), New Delhi, in collaboration with the India International Centre (IIC), and featured **Dr. Alicia García-Herrero** as the speaker and **Prof. Biswajit Dhar** as the moderator.

Welcoming

The round table opened with **Mr. K.N. Srivastava**, Director, India International Centre (IIC), Delhi, and **Prof. Alka Acharya**, Director, Institute of Chinese Studies (ICS), New Delhi, welcoming Dr. Alicia García-Herrero. Prof. Acharya pointed to Dr. García-Herrero's affiliation with the ICS, in addition to the multiple hats that she wears. Mr. Srivastava referred to the previous round table organised by the ICS in collaboration with the IIC, held in October 2024, in which **Dr. Alicia García-Herrero** was the lead speaker. He laid the ground for this round table by highlighting the rising uncertainties under the presidency of Mr. Donald Trump in the US and the anxieties associated with it, especially in the European nations. The study by Dr. García-Herrero, he hoped, will provide an objective and clear view to the audience and provide them with an idea of the way forward in the days of uncertainties ahead.

The moderator, **Prof. Biswajit Dhar**, provided a background to the current turmoil, with Trump back at the helm in the US and its relevance to the theme of the round table. Prof. Dhar pointed out and drew a parallel between the current turmoils resulting from Republican President Trump's policies and those of approximately a century ago by another Republican

president, Herbert Hoover. President Hoover's protectionist policies, highlighted Prof. Dhar, turned the world upside down, including the infamous Smoot-Hawley Tariff Act, which was followed by the Great Depression. The global institutions, which were created after the Great Depression, are facing a threat today.

Technology is the driver for the global economy, and the future depends on these. The current trouble started with the America First policy under the first presidency of Donald Trump, which had two sections: one which focused on China and the second on the rest. China's section focused on intellectual property issues and technology transfers. The Trump administration is using unilateral measures, especially under Section 301 of the Trade Act, to address what they see as an intellectual property (IP) violation, contrary to adhering to global norms. President Trump, in his first term, had ordered an extensive review of Chinese technology and IP policies. This review set the stage for his current actions.

On the contrary, the Chinese reaction has been multifold. Since the pandemic, China has reduced its dependence on the US for its trade from 18 per cent to of its total exports to 14 per cent last year. They have further shifted their focus on 'new quality productive forces' for future industrialisation, shifting away from large investments or the brick-and-mortar economy to the knowledge economy. Prof. Dhar argued that the cost reductions in various high-tech that the Chinese are effecting will have a major impact on the global economy, with the penetration of Chinese firms around the globe increasing. He put forward a question to the audience: Is it going to be just the US, EU, and China, or will India have any chance in the important area of innovation and become one of the leaders in the area of innovation?

Initial Presentations

Dr. Alicia García-Herrero made two presentations. The first presentation was based on her recently published report, co-authored with Nayanima Basu. The presentation was titled *The Economic Reasons Behind India-China Rapprochement Not Enough for a Turnaround*, which provided a short-term outlook on the economic relationship between India and China, and a long-run outlook for the economies of both India and China. Dr. García-Herrero started

with an analysis of Indian and global sentiments on China's Belt and Road Initiative (BRI), wherein it was emphasised that, in comparison to the rest of the globe, Indian opinion has continuously stayed far more negative (see Fig. 1). Interestingly, it was revealed that the South Asian sentiments on BRI have also now plummeted to the levels of Indian sentiments. India's trade imbalance was a major issue that was discussed in considerable depth. Dr. García-Herrero put forward a question: Can India's trade imbalance be changed by attracting FDI in manufacturing?

She put forward numerous datasets highlighting the current realities of India's trade scenario. India's FDI from China has decreased drastically since 2020, and China's share in India's FDI inflow is negligible today. India's backward participation in global trade is low while intermediate goods tariffs are increasing. This is a conundrum because if India wants to become a manufacturing hub, it needs to lower tariffs on intermediate goods and have a higher backward participation in the global trade (see Fig. 2). She highlighted that these datasets negatively affect the opinions of foreign investors. Furthermore, the share of manufacturing in GDP is decreasing, while India's share of global exports has stagnated at just 1.5 per cent, which is contrary to India's aspirations (Fig. 3). It was also highlighted that India receives negligible FDI in the manufacturing sector.

On India's and China's long-run outlook, Dr. García-Herrero highlighted that while China's structural deceleration is unavoidable, India will continue to experience relatively good growth rates. China is experiencing deflation, while positive inflation is a must for growth. She highlighted that China has the upper hand today because of India's dependence on China for trade and its manufacturing needs, but India will have the upper hand in the long run, which is evident from the analysis of the rate of natural change in the population and urbanisation rate in both countries. Additionally, China's return on capital investment is quite low today, while India offers higher returns but requires sufficient capital. Dr. García-Herrero argued that, based on her research, even with decreasing growth rates for both India and China, India will achieve the same size in terms of nominal GDP by 2050 (Fig. 4).

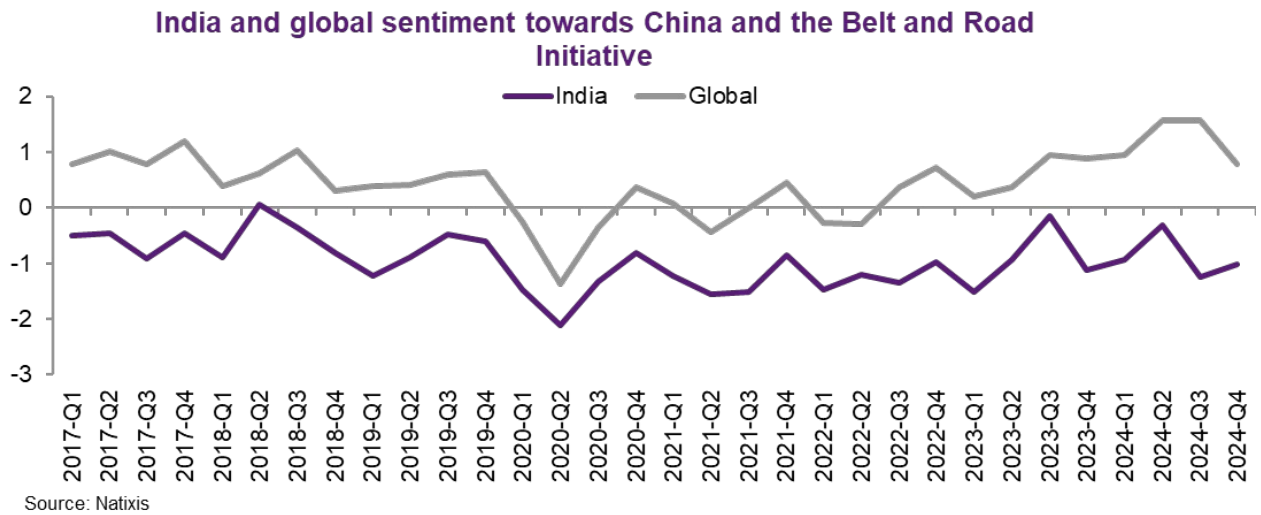


Fig. 1: Indian and Global sentiments towards China's BRI

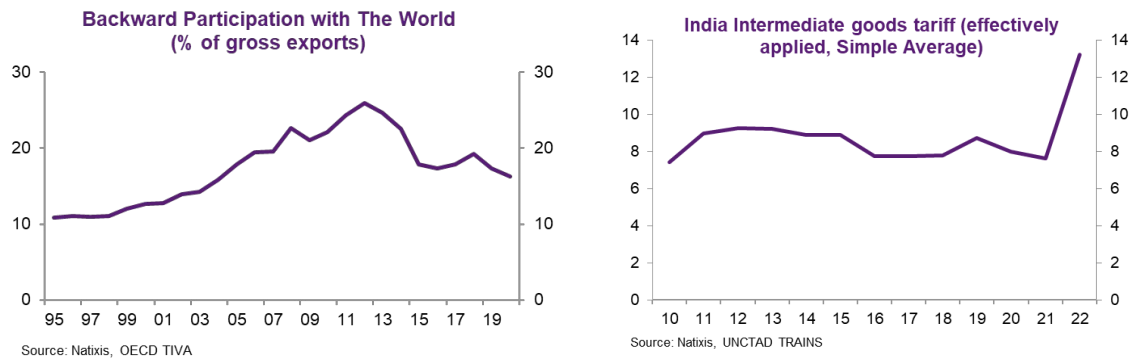


Fig. 2 India's Backward Participation with the World and Intermediate Goods Tariffs



Fig. 3 India's Share of Global Exports and Manufacturing as Share of Its GDP

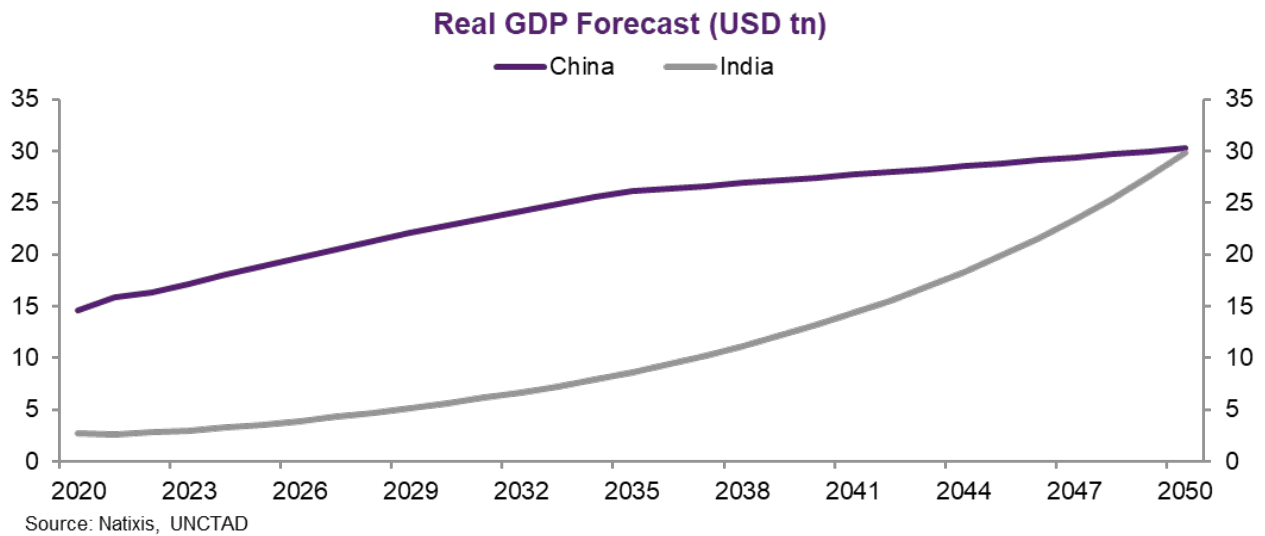


Fig. 4 Real GDP Forecast for India and China

The second presentation, titled *Where Does China Stand in Key Emerging Technologies Compared to the US and the EU: An Analysis of Patents in AI, Quantum, and Semiconductors*, was based on two reports prepared by the speaker, Dr. Alicia García-Herrero, (co-authored with Robin Schindowski and Michal Krystyanczuk) at BRUGEL for the European Commission. These two reports delved into key strategic technologies, specifically artificial intelligence (AI), quantum computing, and semiconductors, from an economist's perspective. The first report delves into the leadership among the US, EU, and China in these strategic technologies, and the second paper focuses on the companies (or corporations) among these nations that lead these fields in innovation and research. This research was based on the acknowledgement that the US is pushing huge amounts of funding into the key strategic technologies while also restricting access to them. The same is true for China. Thus, it becomes important to understand where the leading economies of the world stand today to be able to chart the future. The research used large language models (LLMs) to identify key patents and innovations, subfields, and radical technologies in the fields of AI, quantum computing, and semiconductors.

Dr. Alicia García-Herrero, building on the background provided by Prof. Dhar, pointed out that only if the US dominates these emerging technologies can it credibly maintain its domination. It is already practicing export control and outbound investment screening. The

US is even restricting technologies to Switzerland and Singapore. Thus, if one lags in innovation, then the future is bleak, and the nations need to swiftly catch up. Dr. García-Herrero cautioned India on the same.

In the field of AI, radical innovations that were identified amounted to just 800 between the three economies, with the US leading and China following in second, while the EU had a considerably smaller number of radical innovations. The research revealed that while the US leads in machine learning, natural language processing, data analytics, and advanced medical technologies, China already dominates aerial vehicle technology, biometric security, video processing, and image processing. In the semiconductor industry, China dominates overall compared to the EU and the US because the PRC has invested huge amounts of funds in this sector as a whole. The People's Republic of China (PRC) dominates in fabrication, along with various others. Research reveals that while the United States still leads in the design of semiconductors, which is the highest value-added part of the supply chain, its leadership is slipping. Dr. García-Herrero cautioned that this research doesn't include Taiwan or South Korea, though both have their top companies largely as part of the US ecosystem and file patents in the USPTO (United States Patent and Trademark Office). She also argued that she expects that the US, under Trump, might go for the patents in the next round of export controls to push out the Chinese companies from the US innovation system.

The third area the research focused on, quantum computing, is the only one where Europe stands at the level of China. This field has a small number of patents and radical novelties as compared to the previous two, as it is an embryonic critical technology and is still in the development stage. This field is strongly dominated by the US and is heavily protected. This field has also seen strides by China in many subfields, such as quantum cryptography.

Dr. García-Herrero highlighted that one doesn't need to be first in innovation, but to replicate quickly. The spillovers from innovations and R&D are part of this case. She highlighted the effects and approximate time durations for spillovers within the US, Europe, and China and across countries among these three economies. It was highlighted that it takes only four months for the spillover of AI innovations within China, while it takes over one year for spillovers within the EU. It was fastest in the US in the case of spillovers in AI within the same region or country. Similarly, while it takes Europe around 370 days to replicate a US

radical novelty in AI innovations, it takes far less for the spillover from Europe to China, or the US to China or even China to Europe. Thus, it shows that Europe is further away from the US ecosystem, especially considering that it takes just around 150 days for spillovers from the US to China. Furthermore, the spillovers within the EU take the longest because it is not a single market in terms of innovation. The timeframes of spillovers were similarly seen in the two fields of semiconductors and quantum computing, especially in the case of the EU, wherein it is lagging behind the US and China in taking advantage of spillovers.

Analysing the list of companies from the three economies that work on and lead in these technologies, multiple findings were highlighted. In China, the most famous and well-known companies are not the lead innovators. It was found that the companies that produce radical innovations tend to suddenly disappear, but will come up with another name for their companies. This was because of various reasons, including coming under restrictions after inclusion in the US entity lists. Additionally, it was pointed out that the famous companies might have a large number of patents but not necessarily have radical innovations. These companies also replicate and optimise considerably.

In the United States, the top innovators are the tech companies, not research institutions or universities, while Europe topped the list with the largest number of top innovators as research centres. Furthermore, it was highlighted that the type of innovator, public or private, also has an impact on the level of protection of their innovations and their commercialisation. Dr. Garcia then put an end to her presentation.

The moderator, Prof. Biswajit Dhar, highlighted the rule of 70, wherein if India grows by 7 per cent per annum, then its GDP is going to double in ten years, and therefore the targets are to grow by more than 7 per cent per annum. Prof. Dhar further highlighted that tech collaborations are the way and not the technology transfers from the developed world to the developing world. He argued that the technologies are commercialised, as has been highlighted in various research papers, and not transferred. Moving to the issue of patents, he pointed out that the patents are public documents that hide more than they reveal, but even this might change in the future, especially with the US leading the charge in protectionism. Furthermore, he argued that going forward, IP and knowledge would be protected much more

stringently. Thus, Prof. Dhar contended that trade secrets could be the way forward, and Americans will have legitimised it by incorporating it into the trade agreements.

The moderator then opened the floor for discussion and comments from other participants. Dr. García-Herrero's presentation received an enthusiastic response, with participants raising thought-provoking questions and sharing insights that further enriched the discussion in the following ways:

Discussions on Innovation, Its Ecosystem and Implications

A parallel was drawn between Indian and European primary sources of research and development (R&D), wherein it was highlighted that the research institutions were largely publicly financed, while the private sector lagged behind. This was highlighted as a “foundational problem” for India, where just 0.7 per cent of GDP is spent on R&D. This spending as a percentage of GDP hasn't changed for the last decade despite the growth India has experienced. Furthermore, even though it has been highlighted numerous times in the countless researches that the most productive R&D happens in the private sector, yet in India, as well as Europe, 70 per cent of the research takes place in the public sector. This is the exact opposite of the global average, where 70 per cent of R&D happens in the private sector and only 30 per cent in the public sector.

It was noted that a balance of imitation and innovation is important to the innovation ecosystem, as a large number of evolutionary economists have repeatedly highlighted. Building on this, the extent, if any, of the advantage that the large countries like the US and China are bound to have was raised. Furthermore, the extent of the dependence of the quality of the ecosystem on the quality ladder of imitators, as opposed to innovators, was questioned. The methods to measure spillovers, from the repetition of patents or the discovery of a new, less radical patent, were raised to understand the methodology of the research.

It was highlighted that large internal migration occurs within the US and China, and technology transfers are also a resultant, to a large degree, through the movement of people,

as the studies of technology transfers have shown. In this area, it was highlighted that Europe is “handicapped.” Although a lot has been done to improve the flow of people within Europe, however recently, there has been an immense backlash against it, thereby impeding the internal transfer of technology within Europe.

The issue of export control on patents was raised. It was argued that a large number of Indian companies and startups that have their patents registered in the US but operate in India and around the world might face issues if the patents registered in the US face restrictions. It was highlighted that various US organisations have imposed a ban on Indian-Americans, among others, who are part of high-tech sectors, from carrying their laptops to India to restrict the transfer of technology from people-to-people contacts.

A question was posed by a participant enquiring about suggestions on a European country with which India should strike a partnership in technology and innovation while India and the EU are negotiating a Free Trade Agreement (FTA). Furthermore, recommendations from Dr. Garcia were sought, because of her immense experience in the field, for improving India’s R&D sector and rectifying the misalignment that is seen in this field.

Response by Dr. Alicia García-Herrero

In her response, Dr. García-Herrero pointed out that her research and presentation moderated the projections to show that India doesn’t need to excel in its growth, but that China will experience deceleration. Another question was whether China can mitigate its deceleration because of innovation. She responded that Chinese innovations and investments in sectors such as robotics have so far not been reflected in productivity, whether total factor productivity or labour productivity, which are decelerating in China. Dr. García-Herrero pointed out that the huge amounts of waste that happen with regards to resources in China are one of the reasons for this problem. She gave an example of the installation of robots in factories where they are not needed, all the while, there is large youth unemployment in China. Importantly, she highlighted that investments in scientific innovations cannot solve everything, but that the institutions and civil society, among others, are also important pillars

to support the nation's growth. She used South Korea and Israel as examples, both of which have significant R&D expenditures relative to their GDP (approximately 6% and 5%, respectively), but their growth is quite modest. She also emphasised that, for a variety of reasons, including geography and diversity, China has a lower diffusion of innovations than Israel. Furthermore, she pointed out that on the other end of the spectrum, India only invests 0.7% of its GDP in R&D. She emphasised that in this matter, both of these countries might be considered as two extremes, and which is worse, we can't be sure.

On the identification of spillovers in innovations and their connections, Dr. García-Herrero explained that when reviewing the patents, one can find that the patents are quite similar within the same country or across countries. In many cases, one may even find the names of researchers who have worked in the same subfield are the same. There are Chinese names on the US patents, and the same name on a similar patent, whether in a joint paper or otherwise, can also be found in China. Situations similar to these are extensive; sometimes they are known, and sometimes unknown. The LLMs were used to sift through the data to find the requisite information for the research. She highlighted that there are multiple registries around the world, such as the -WIPO (World Intellectual Property Organization), USPTO (United States Patent and Trademark Office), CNIPA (China National Intellectual Property Administration) or IPO (India Patent Office), among others, which complicates the work.

She further highlighted the various export controls, including the entity lists focused on various sectors, and the rush to restrict the flow of dual-use technologies from the US. Inclusion in the entity list can restrict imports, thereby hindering development and innovation. Interestingly, however, she pointed out that these companies can still register their patents in the US. They just need an office on US soil. The question she posed to participants was, can these patents come under the export control in the future? Therefore, she advised that Indian companies need to first register their patent in India. She argued that it is logical to think that the restrictions on patents might be the next thing from the US side, as restrictions on others — investments, exports, and innovation — are already there. She cautioned that this is just a presumption.

Discussions on India, China and their Future

On the issue of FDI from China to India, specifically in the infrastructure sector, it was agreed that the Chinese companies are indeed interested in investing in India, but it is the Indian government policies that restrict the investments from China because of security concerns. On the manufacturing front, it was pointed out that the Indian government has been trying to attract investments in this sector, especially to create jobs, but issues still remain that hinder smooth progress.

The effects of innovations on the societies, particularly in India and China, were raised. A participant highlighted innovations, such as mobile payments, that led to cashless transactions and a widespread change in society, as one such innovation. The participant argued that the effects of such innovations are much more pronounced in developing societies. Additionally, he pointed to the faster adoption of such technologies by developing countries, such as India and China, as compared to developed countries.

Taking the discussion further, the growth trajectory of the PRC was brought in to further understand the Chinese ecosystem. The first step in its growth trajectory was investments in manufacturing, followed by the real estate sector, which was the main cause of overheating. It has now changed to a deflationary situation. The third step in this growth trajectory is investments in technology. It was highlighted that China's case of growth is much different from others. Their investment is delinked from profitability, and that is why one sees the huge capital stock in the case of China but not in the case of India. Since innovation in China is delinked from profitability and has been strategised, the kind of technological growth that has taken place is much different. On the contrary, India's case is just the opposite. In India's case, it seems that corporations have high profitability, but their share in the country's total R&D spending is quite low. Indian corporations are making profits out of financial gains, but are making low investments in R&D. Thus, it can be seen that the rules of the game in the two countries are different.

A participant compared the GDP per capita of China and India. It was highlighted that China's GDP per capita is now five times that of India. It will take an approximate 8 per cent

compounded annual growth for around twenty-two years for India to reach the current per capita income of China.

Another participant questioned whether the Chinese enterprises that have been included in the list of companies with the highest innovative outcomes are publicly or privately owned, as well as their composition in the list. This was particularly important, it was highlighted, because even a large number of startups in China are also publicly owned. It was pointed out that China is engaging in “industrialised innovation,” wherein a large amount is invested in R&D, with strategic innovations and their spillovers being produced. It was questioned if such policies can ameliorate the structural deficiencies, demography, and other issues that China is facing.

Response by Dr. Alicia García-Herrero

Dr. García-Herrero clarified that Indian GDP per capita will take much longer in dollar terms to reach China’s level, but the total nominal GDP of India, that is, the size of the economy, will reach China’s level much earlier (by 2050). At the same time, the contribution of the Indian economy to global growth is already increasing. She argued that India’s contribution to global growth will soon surpass China’s contribution. This will enable India to be one of the main determinants of commodity prices, and India’s relevance will further grow. She cautioned that while the projections show that China will not overtake the US in the size of its economy, with Trump at the helm in the US, the projections can change. The per capita income of China is bound to increase with its population falling, even if it doesn’t grow rapidly. The same can be seen in Japan, where its GDP per capita is growing faster than its GDP. Thus, Indian and Chinese per capita incomes might not reach similar levels by mid-century, but the real size of the economies is bound to reach the same level.

Dr. García-Herrero, in response to the example of mobile payments, questioned the advantages of using only mobile payments, arguing that it has not been proven that it is better, as there are also problems with it. She further outlined the concept of competitive neutrality. Generally, it is used to make the public sector compete on an equal footing. She argued that this might be useful for India, and India can help its state-owned companies to be

competent in this way. She highlighted that despite cheap funding and numerous other incentives, the public sector will also need to provide equally competitive salaries for its researchers, which is usually not the case. Dr. García-Herrero argued that the problem in R&D is not public-led versus private-led, but the incentives for innovation and the way partnerships are carried out. The public sector, research institutions, and universities can form partnerships for the commercialisation of technologies and thus aid in the diffusion of technologies in the country. Thus, public funding can be a big aid to the diffusion of technologies and innovation. She highlighted the innovative incentives that China has come up with to aid in its goal of R&D. One such example is the payments a researcher receives when he/she publishes in a Chinese journal, which acts as aid to the researchers, while journals receive greater exposure and internationalisation. Contrary to this Chinese practice, the journals in the Western countries do not provide any payment to the researcher for their publications in a journal. The incentive structure in China is different from around the world, and thus, it is much easier to move up the ladder there because of the monetary incentives that they provide. This shows China's creativeness in inventing incentives

Discussions on the Competition between the US and China

The competition between the two powers, especially the US and China, which are the main drivers of the growth of technology and innovation in contemporary times, is getting intense. Now, over the years, China has overtaken the US in some subareas of artificial intelligence, semiconductors, and quantum computers. It was, thus, questioned if China can overtake the US in the future and if there will be a new century of Asia with China dominating in challenging or controlling the American hegemony. A paradox was underscored wherein China is creating an alternate ecosystem while also being part of the current one. This alternate framework does not directly challenge the US but does so indirectly. Additionally, China has also started to replicate the US in terms of controlling the flow of technologies outside the country. It was questioned whether China is following the US policies in terms of control, or if it is opening up the whole sector as a new kind of thing?

A participant presented a view on the strategic culture, which, he argued, can be understood in its most expansive form to include academic culture, institutions, corporations, private sector, culture in its various manifestations, and governments, among others, in addition to the military application of force. This strategic culture, in conjunction with the calculus of technology, is coming to the forefront of the competition. It was further argued that all future contestation will be determined by technology and its nimbleness.

Response by Dr. Alicia García-Herrero

Dr. García-Herrero agreed that China is moving up the ladder even on critical technologies, but they still don't dominate. This is at a time when the US is becoming tougher and increasingly hesitant to share technologies with the world. On the contrary, earlier, the US was largely open access, which had allowed China to have relatively easy access to technologies and thereby their diffusion. However, this is changing over time, as can be seen from the policies of the US, both under the presidencies of Biden and Trump. Furthermore, it was questioned whether and for how long Europe can maintain its openness. While wrapping up the discussion, Dr. García-Herrero further argued that despite the hindrances being put up, the spillovers or diffusion of technologies are not going to completely stop.

The moderator, Prof. Biswajit Dhar, in his concluding remarks, stated that the round table will be bound to have spillovers, especially for the participants. He quipped that the presentation and discussions from the round table are bound to continue in the next meeting with Dr. Alicia García-Herrero, as the same happened at this round table, wherein the discussion from the earlier round table was continued to a certain extent. The moderator thanked Dr. García-Herrero for her enlightening presentation, which opened new vistas for research. He further pointed out that India is planning to strike out the clauses from its law that mandate the patents to be registered first in India. He cautioned against doing so, especially looking at the current American attitude, and argued that doing so can be detrimental to India's interests. Mr. Ravi Bhoothalingam, the convenor, presented a vote of thanks on behalf of the Institute of Chinese Studies. Mr. Bhoothalingam pointed out the immense engagement from the participants, with ideas bubbling back and forth. He thanked India International Centre (IIC) for their partnership and making the round table possible and successful. This concluded the formal proceedings.

Image Gallery



Image Gallery



Institutional Profile



The **Institute of Chinese Studies (ICS)**, New Delhi is engaged in and committed to interdisciplinary research on China. Apart from the annual All India Conference of China Studies (AICCS), the Institute undertakes various collaborative research programmes and multilateral initiatives with prominent institutions in India and abroad, and brings together leading and upcoming scholars through multiple fora. Among its many legacies, it has been conducting the iconic Wednesday Seminar for over 50 years and publishes the *China Report*, a peer-reviewed quarterly journal on China and East Asia, currently in its 60th year of publication.



The **India International Centre (IIC)** is a non-government institution widely regarded as a place where statesmen, diplomats, policymakers, intellectuals, scientists, jurists, writers, artists and members of civil society meet to initiate the exchange of new ideas and knowledge in the spirit of international cooperation. Its purpose, stated in its charter, is ‘to promote understanding and amity between the different communities of the world’. In short, the Centre stands for a vision that looks at India as a place where it is possible to initiate dialogues in an atmosphere of amity and understanding.