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Perspiration to Inspiration: China's New Quality Productive Forces Initiative



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Technology and the Core of China's Transformation

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Introduction

China's economic growth and transformation in the past four decades is nothing short of miraculous. Since the reform and opening in 1978, China's annual real GDP growth rate has nearly reached an average of 10%, and the nominal GDP value has increased from 300 billion USD in 1980 to close to 18 trillion USD in 2023. China has lifted over 800 million people out of poverty and urbanized over 60% of its population. From a poor, agrarian country to the second-largest economy with a strong industrial base, China's transformation is an unprecedented historical event. Central to this transformation has been China's ability to continuously upgrade its productive forces. At the 19th National Congress of the Communist Party of China (CPC) in 2017, General Secretary Xi Jinping stated that China has been transitioning from high-speed growth to high-quality development, which aims to achieve greater efficiency, equity, sustainability, and security. To achieve high-quality development, China must focus on developing new quality productive forces to drive innovation, enhance productivity, and maintain sustainable growth. Xi emphasized during the 11th collective study session of the Political Bureau of the CPC Central Committee in January this year that "developing new quality productive forces is an endogenous requirement and a pivot of high-quality development," and that "new quality productive forces have emerged in practice and exhibited their strong role in driving and supporting high-quality development."¹

¹ "Xi Stresses Development of New Productive Forces, High-Quality Development," *Xinhua*, February 2, 2024, <https://english.news.cn/20240202/db7f1bd3714a4b7c8bc0835abe4c35f7/c.html>.

What Are and How to Develop New Quality Productive Forces?

New quality productive forces represent a systemic evolution of production technologies, processes, and relations. New quality productive forces encompass three dimensions.

First, cultivating new quality productive forces requires technological breakthroughs and the establishment of strategic, emerging industries such as artificial intelligence (AI), quantum computing, humanoid robotics, biotechnology, new materials, new energies, commercial aircraft design, and other advanced manufacturing sectors. These technologies and industries will take the lead in driving productivity growth and providing technological input to other industries.

The second dimension involves upgrading and transforming traditional industries using these new technologies. China has gained tremendous competitiveness in a wide range of industrial supply chains in the past four decades, encapsulating over 200 mature industrial clusters. Developing new quality productive forces does not mean an exit from these traditional industries. Rather, it entails the transformation and advancement of these industries. In particular, the adoption and deployment of digital and green technologies will improve both the quality and sustainability of these traditional industries.

The third and final dimension involves reforms and improvements of the mechanisms and processes involving resource allocation and production. A well-established, unobstructed national market of productive factors and products would facilitate the spread of technologies, boost industrial and geographic linkages, enhance economies of scale, and achieve a higher level of efficiency.

Skeptics often question if China can leapfrog into cutting-edge technologies. They argue that China's success in the past owes more to "perspiration" than "inspiration." Decades of extensive growth by way of heavy input of labor, natural resources, and capital seem to have run out of steam, but it is uncertain whether China is able to move on to the high-quality growth, especially amid the Western restrictions on technological sharing. Notwithstanding these challenges, evidence suggests that China is not only making solid progress in technological innovations but also has the potential to leapfrog. Take AI as an example. By the end of 2023,

China had released over 200 large AI models, with more than 20 of them approved to provide services to the public. In 2022, about 40,000 AI patents were granted to Chinese inventors, more than four times the comparable figure of 9,000 for the United States. For all the top three categories of patents, including machine learning, personal devices and computing, and computer vision, inventors with addresses in China again had the highest numbers of patents.²

China not only leads in the research and development (R&D) of innovative technologies, but also dominates in the commercialization and production of tech-intensive products. China's global share in semiconductor foundry capacity surged from negligible in 2005 to 27% in 2022. China also installed 290,258 industrial robots in 2022, more than the rest of the world combined. For the "new three" products, China accounts for over 80%, 50%, and 20% of global solar panel production, lithium batteries, and EV exports, respectively. China also accounts for a significant share of other critical industries such as machine tool production, wind power equipment, high-speed trains, civilian drones, and mobile phones. In other words, China's technological advantages are growing and widening in an extensive range of sectors, and its technological competitiveness will spark broader productivity growth and structural transformation. Indeed, in 2022, the technologically intensive green economy and digital economy contributed 4.7 percentage points to China's growth rate, more than offsetting the negative contribution of 3.7 percentage points from the real estate sector.

Rather than sporadic "green shoots," high tech and green tech are integrating into the broader economy, transforming traditional sectors. AI, robotics, automation, and big data are permeating traditional sectors such as manufacturing, logistics, healthcare, education, agriculture, and many others, ushering in more intelligent, efficient, low-carbon, and safer production methods. Data is a critical productive input being integrated into production through new-generation connectivity and AI. For instance, in smart factories, data is collected in real time by sensors installed on the production lines and equipment. It is then transmitted wirelessly to the internet for real-time monitoring of the production process. Data generated from production undergoes rapid processing and transmission, then is fed back into the production process. This transforms the factory into an intelligent network that can be adaptively managed and adjusted, optimizing industrial control and management. In modern China, many

² "Global Competitors Outpace US in Patents," *National Science Board*, February 29, 2024, https://www.nsf.gov/nsb/news/news_summ.jsp?cntn_id=309184&org=NSB&from=news.

manufacturing enterprises employ solutions like EasyCloud MES for intelligent manufacturing management, leveraging cloud computing for industrial big data analysis. Going forward, through the Internet of Things, including machine networking, Radio Frequency Identification (RFID), and smart wearable devices, advanced manufacturing can establish interconnections and feedback loops among humans, machines, materials, and environments. This improves overall resource allocative and operational efficiency, ensures production security and resiliency, and enhances product quality consistency.

The third dimension of new quality productive forces involves building the "soft infrastructure" to support these forces effectively. To facilitate the most efficient allocation of resources, markets of factors and output must be unified and market competition must be constructive. Local protectionism, which tends to result in resource wastage and diseconomies of scale, must be avoided. President Xi has emphasized the importance of "adapting to local conditions" in cultivating new quality productive forces.³ That is, each local government should take into account local resource endowments, industrial bases, research and development capacities, and talent pools, amongst other factors, to selectively promote the development of new industries, models, and dynamics. It is important to avoid indiscriminate expansion and a one-size-fits-all model. For example, Anhui Province is accelerating the development of three major science and technology innovation hubs in quantum information, fusion energy, and deep space exploration. Heilongjiang Province is focusing on digital transformation in manufacturing, empowering small and medium sized enterprises with digital capabilities, and implementing pilot projects in intelligent manufacturing. These initiatives exemplify the concept of "adapting to local conditions" to develop new quality productive forces.

At the national level, three important aspects of reform are needed to facilitate the development of new quality productive forces. First, developing new technologies is a long-term, uncertain, and costly process. The private sector cannot do it on its own. The government must double down on the R&D spending. In 2023, China spent over 3.3 trillion CNY (about 458.5 billion USD) on R&D, accounting for 2.62% of GDP. While the R&D spending increased by 8.1% year-on-year, it was slower than the average annual growth rate of 11.75% during 2019-2022. Additionally, China's basic research spending as a share of

³ "Xi Calls for Developing New Quality Productive Forces Tailored to Local Conditions," *CGTN*, March 6, 2024, <https://news.cgtn.com/news/2024-03-06/Xi-Developing-new-quality-productive-forces-adapt-to-local-conditions-1rKrdxUPaX6/p.html>.

GDP is less than a third of that of South Korea and the United States.⁴ There is consequently still plenty of room for R&D spending to grow. Second, emerging industries need to be supported by well-crafted industrial policies, trade policies, and other supportive policies. Indeed, the Chinese government has promulgated many long-term plans and policies, such as the National Medium and Long Term Program (MLP) for Science and Technology (S&T) Development (2006-2020), and the 14th Five-Year Plan that codifies and prioritizes the strategic emerging industries. These plans and policies help strengthen policy coordination among various ministries and local governments, optimizing the policy environment for innovation, and tech development. Third, regulations and guidance for collecting, using, and trading data are critically important to promoting data as an essential productive input. This is imperative not only for economic transformation but also for national security. Collaborations with the international community and the harmonization of standards would be instrumental in establishing a coherent framework to encourage and regulate data usage.

Why Are New Quality Productive Forces Necessary?

Why is promoting new quality productive forces necessary? First, as the high-growth model relies on extensive physical inputs and generates numerous negative environmental externalities, the high-quality development model calls for productivity growth with lower demand for natural resources, capital, and labor. China's total factor productivity has declined since the 2008 global financial crisis, as is the case for the rest of the world. Developing new quality productive forces is key to reviving total factor productivity and overcoming the middle-income trap. China is also undergoing a demographic transition, with an aging population and a declining labor force. While demographic dividend supported past growth, future growth requires talent dividend. Therefore, it is necessary to enhance labor skills and productivity, thereby boosting new quality productive forces.

Second, as China grows into a middle-income country, there is a new demand from the public that goes beyond material wealth. People now seek better natural environments, enhanced social services, and higher levels of cultural experiences. To meet these growing demands, China would need new products and services, as well as production forces that underpin these products and services.

⁴ Camille Boullenois, Agatha Kratz, and Laura Gormley, "Spread Thin: China's Science and Technology Spending in an Economic Slowdown," *Rhodium Group*, December 15, 2023, <https://rhg.com/research/spread-thin-chinas-science-and-technology-spending-in-an-economic-slowdown/>.

Finally, the current global environment is becoming more complex and hostile. On the one hand, Western economies have launched many protectionist measures that obstruct international trade and investment; on the other hand, the race for technological primacy has become more intense. In addition, the emergence of new technologies and the lack of incumbents provide great opportunities for developing countries to make breakthroughs and leapfrog through the technological landscape. For example, while Western transnational corporations dominate the traditional internal combustion engine car markets, Chinese automakers are gaining a competitive edge in the electric vehicle market. This is a telling example of how, by focusing on emerging technologies and industries, China can seize the opportunity to play an important or leading role in global technological development.

Challenges to Cultivating New Quality Productive Forces and How to Overcome Them

To continue nurturing and strengthening the new quality productive forces, some steps must be taken. First and foremost, China must mobilize resources to break through the "bottlenecks" in some of the critical technological areas. Semiconductor fabrication and AI are the two most critical technologies, given that they are the core ingredients for many other technologies and sectors. Domestically, China needs to mobilize all societal efforts from governments, entrepreneurs, scientists, and engineers, and provide all necessary resources, from financial capital to human capital to infrastructure, to develop these two critical technologies. Internationally, China should seek partnerships, especially with technologically advanced companies, and attract international talents. A business-friendly environment, incentives, and a holistic support system must be established to foster international cooperation and collaboration on critical technologies.

Second, China needs to continue to invest in human capital. This requires not only increasing access to education, especially in rural areas and less populous cities, but also improving educational quality. A key focus should be on expanding vocational education programs. Although China already has the world's largest vocational education system with around 10 million students in 2022, there is still a shortage of skilled workers in the manufacturing sector; the shortage is estimated to reach 30 million by 2025, according to the Ministry of Human Resources and

Social Security.⁵ The lack of specialized teachers, social respect, and corporate participation has contributed to the shortcomings of the vocational education system, leading to a shortage of skilled technical workers. The amended Vocational Education Law, which took effect in May 2022 and aimed to elevate the status and pay of technical workers, is a step in the right direction. Finally, efforts must be made to deepen cooperation between universities, vocational schools, and enterprises to strengthen the synergy amongst scientific research and industrial applications and commercialization.

Third, as mentioned above, the third dimension of the new quality productive forces is more efficient mechanisms to allocate resources and more effective ways to organize production. That is to say, production forces and production relations mutually reinforce each other. It is crucial to coordinate and harmonize production relations between the public and private sectors, between managers and workers, between different localities, and between different stakeholders. For example, the public and private sectors have their own unique roles in the economy, and their symbiotic interactions are of great significance. For infrastructure and basic research, the public sector should fully leverage its strengths in mobilizing, organizing, and coordinating the efforts. Meanwhile, both public and private enterprises should be encouraged to utilize and commercialize research outcomes. Institutional and market barriers should be removed for private enterprises to participate in emerging industries and tech sectors. A fair, dynamic, and competitive market that is tolerant of failures and full of vitality is most conducive to innovations and technological breakthroughs.

In conclusion, promoting new quality productive forces is key to transforming China's economy from the past high-growth model to the modern high-quality paradigm. Nurturing and strengthening high-quality productive forces requires technological breakthroughs in critical areas, the development of strategic emerging industries, the integration and adoption of new technologies in traditional industries, and the reform of public and private institutions to support new quality productive forces and to adapt to new production relations. Through calibrated policies and effective mobilization of all resources, including capital, entrepreneurship, and talent, China is forging ahead in developing new quality productive forces and transitioning to high-quality growth.

5 Mandy Zuo and Mia Nulimaimaiti, "Despite China's Push, Vocational Education Is Still Struggling with a Shortage of Staff and Lack of Respect," *South China Morning Post*, January 8, 2024, <https://www.scmp.com/economy/china-economy/article/3246043/despite-chinas-push-vocational-education-still-struggling-shortage-staff-and-lack-respect>.

New Quality Productive Forces Undergird China's Striving Toward Strategic Autonomy on World Stage

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At China's 2024 Two Sessions meeting, the Government Work Report called upon China to modernize its industrial system and embrace "new quality productive forces." The term was first coined by Chinese President Xi Jinping during his trip to the "Rust Belt" of China – the Northeast of the country.¹

The rejuvenation of rural areas, especially in inland areas like Central and Northwestern provinces, and previously industrialized but now struggling ones in the Northeast,² is a core tenet of Xi's economic vision. Such rejuvenation serves as a crucial process in ensuring that prosperity is accessible to all Chinese citizens, as opposed to solely those who have the privilege of residing in or moving to more affluent areas, such as coastal provinces.

Xi's words during his visit reflected a significant emphasis on a more balanced developmental approach across different regions and foreshadowed highly comprehensive macroeconomic reforms seeking to emancipate and leverage the hitherto-inhibited labor productivity in less developed regions of China. His recommendations also highlighted the significance of China's efforts to continuously enlarge its high-potential middle-class population, which would provide the world with a leading consumption market over the coming decade.

1 "New Quality Productive Forces Revive Rust Belt," *China Daily*, March 11, 2024, <https://www.chinadaily.com.cn/a/202403/11/WS65ee5c71a31082fc043bbcd0.html>.

2 "Xi Stresses Striving for Full Revitalization of Northeast China," *Xinhua*, September 10, 2023, <https://english.news.cn/20230910/389cddb1029d49a0991adfa8006607c/c.html>.

It would be erroneous for external observers to dismiss this proposed concept as merely a rebranded or rehashed version of the "Made in China 2025" initiative expounded by President Xi and Premier Li Keqiang in May 2015. A more accurate interpretation of the "new quality productive forces" proposal is that China is keen on shifting away from being a purely catch-all manufacturing powerhouse to a globally competitive economic force with a comparative advantage in nascent, cutting-edge technologies and advanced manufacturing. Nurturing and harnessing new quality productive forces is hence the next stage in China's industrial transformation.

Making Sense of New Quality Productive Forces – An Interpretation

New quality productive forces consist of several core components.

The first is an emphasis on total factor productivity (TFP) enhancement. Growth in TFP denotes output growth that cannot be attributed to growth in labor or capital: it reflects production efficiency, advancements in innovation and technical frontiers, and the results of organizational and management improvements. It amplifies the value of labor and capital, even if the latter remains constant. Xi's report to the 20th National Congress of the Communist Party of China explicitly referenced this economic concept in Section 4, "Accelerating the Creation of a New Development Pattern and Pursuing High-Quality Development."³

Chinese leaders are acutely aware that as the largest contributor to economic growth in recent years, bolstering TFP is crucial to the economy and its future trajectory.⁴ Whilst certain scholars have recently alluded to a purported decline in TFP over the past decade,⁵ it is evident that there is much China can and will do to improve its economic productivity. This can be achieved through streamlining and targeting scientific research toward strategically vital technologies.

The second component is the incorporation of "innovation and sustainability," key objectives of "China's new development philosophy," into the country's production apparatus and processes.⁶ As a world-leading power in sustainable transition and the promotion of nascent renewable energy technologies, China has undergone groundbreaking transformations in terms of environmental and industrial policies over the past decade to address the daunting challenge of climate change.

3 Xi Jinping, *Report to the 20th National Congress of the Communist Party of China*, October 16, 2022, https://www.mfa.gov.cn/eng/zxxx_662805/202210/t20221025_10791908.html.

4 Feng Luo et al., "Assessing the Total Factor Productivity Growth Decomposition: The Transformation of Economic Growth Momentum and Policy Choice in China," *Environmental Science and Pollution Research International* 30, no. 12 (December 14, 2022): 34503–17, <https://doi.org/10.1007/s11356-022-24282-0>.

5 Michael Pettis, "China's Economy Needs Institutional Reform Rather Than Additional Capital Deepening," *Carnegie Endowment for International Peace*, July 24, 2020, <https://carnegieendowment.org/chinafinancialmarkets/82362>; Diego A. Cerdeiro and Cian Ruane, "China's Declining Business Dynamism," *International Monetary Fund*, February 18, 2022, <https://www.imf.org/en/Publications/WP/Issues/2022/02/18/China-s-Declining-Business-Dynamism-513157>.

6 "New Quality Productive Forces Crucial to China's Economic Landscape," *Xinhua*, March 6, 2024, <https://english.news.cn/20240306/8620633915f44159e184fe8bf36be5b/c.html>.

The shift toward electric vehicles, wind and solar energy, or even nuclear energy, could not be accomplished without holistic and qualitative uplifting of the country's productive forces. It is not solely about the numbers, but the quality offered by the production capacity.

With that said, so long as state-owned enterprises work in tandem with an empowered private sector that moves to regain momentum and confidence, China's path to sustainable innovation remains clear and promising. The "new quality" of the advocated productive forces will likely manifest through continuous strengthening of secondary and tertiary education infrastructure, increased investment in efficacious and cost-effective research, and heightened focus on and facilitation of start-up entrepreneurship and inventors working at the intersection of sustainability, technology, and social impact.

The third component is the embedding of pragmatic pluralism into developmental trajectories. There is an oft-asserted mantra in some circles that China's developmental model must be fundamentally opposed to non-Chinese, specifically Western developmental models. Yet this is a misconception that unduly conflates difference with opposition. As President Xi noted recently, China does not believe in "adopting just a single model of development." He also affirmed that "developing new quality productive forces does not mean neglecting or abandoning traditional industries."⁷

These insights crucially demonstrate that it is only through drawing upon the best of existing and past models, as well as channeling the collective wisdom of China's economic academia, government officials, and private sector, that China can develop a sustainable and viable path of industrial improvement and reform. Most of these so-called "old" sectors, whether it be property or digital platforms, will continue to play an important role in the years to come, not only given their significant contribution to employment, but also because of the need for a balanced economic portfolio overall.

The Case for Comprehensive Strategic Autonomy

I now turn to the argument that the development of new quality productive forces is critical to China's ability to achieve comprehensive strategic autonomy on the world stage. Some clarifications of this

⁷ "Xictionary: New Quality Productive Forces," *Xinhua*, March 6, 2024, <https://english.news.cn/20240306/a2905236963f4b00adae5e8b1b6c2c2f/c.html>.

concept, which I draw partial inspiration from European geo-strategy,⁸ are duly needed.

To be clear, autonomy on the world stage here does not denote hegemony or dominance. As Chinese leaders have explicitly stated, and as any sound political observer could reliably note, hegemony is both costly and risky to maintain for any individual country. As a pragmatic nation, China is unlikely to pursue the same model as the hegemonic powers of the past, such as the UK until the mid-20th century, or the US thereafter, both of which governed extensive overseas territories, maintained overseas military presence, and waged devastating wars. Instead, autonomy closely aligns with the Chinese people's ability and right to defend their interests on the international stage, live according to their cultural and social norms, maintain the defined social contract with their government, and contribute to a world where global challenges can only be addressed through multilateral cooperation.

The discretion afforded by such autonomy must be exercised strategically – that is, China should be able to secure the interests of its people without harming its neighbors or significant partners. A core tenet of Mencius' account of "Wang Dao," in contrast to the force-oriented "Ba Dao," as touted by Han Fei and Shang Yang, is that leaders should lead by genuinely winning over the hearts and minds of people. When applied to foreign policy and diplomacy, "Wang Dao" calls upon countries to pursue, strengthen, and project soft power, which enables others around the world to view them not as threats, but as pioneers and anchoring figures worthy of respect. Legitimacy stems not from violent force or military might, but from strategic and transformative value-based leadership. In my view, this is what differentiates "un-strategic" autonomy from "strategic" autonomy.

The autonomy in question must be comprehensive in at least two ways – dimensionally and in relation to other countries and non-state actors, such as corporations and investors. The rise of China as a manufacturing powerhouse and market over the past few decades has positioned the country as a key node in the global economy – one that can withstand the vacuous cries for "de-coupling" by sheer virtue of its technological maturity, industrious work ethic, and substantial manufacturing population base unique to the country.

8 Shengzhou Ye, "EU Strategic Autonomy: Easier Said Than Done," *ThinkChina*, May 12, 2023, <https://www.thinkchina.sg/eu-strategic-autonomy-easier-said-done>.

Beyond the commercial aspects, the incumbent leadership has commenced active development and articulation of its own approach to technological, political, and industrial governance. Whilst the jury is still out on whether such efforts will eventually pay off, it is evident that the Chinese leadership has awakened to the reality of supply chain resilience, self-sufficiency in strategically sensitive sectors, combining digitalization with infrastructural developments to ensure that digital technologies are harnessed for good use. Such recognition is pivotal: the Chinese state cannot be "globally autonomous" unless it possesses autonomy in a rich multitude of dimensions – including the economic, financial, technological (especially in artificial intelligence, quantum computing, nanotechnology, and biotechnology), and political ones, to name but the core few.

There are also questions about partnerships that China may opt to establish. In an era of globalization, despite challenges like the attenuation of financial integration and inter-connectivity, or supply chain disruptions due to the pandemic and geopolitical conflicts, no country can survive alone. Yet China must ensure that its choice of collaboration does not unduly and inadvertently aid forces bent on containing and hindering its rise, and that its openness and connectivity with other powers does not become a liability by creating over-dependence on other states.

New Quality Productive Forces Have a Role to Play in China's Search for Comprehensive Strategic Autonomy

With the above measures, we should be able to see how the two conceptually impressive frameworks come together.

First, new quality productive forces play a central role in writing the next chapter of this story. As many have noted, the days when China could lean into unbridled, investment-led growth in the property sector and exports to a few select markets like the United States and the European Union as core economic pillars are now over. The former is unsustainable due to excessive leveraging, which the incumbent administration has swiftly redressed through a series of difficult but necessary decisions. The latter has become increasingly difficult due to the ideological nature of geopolitics and the structural competition between China and the US.

To remain a truly autonomous actor free from economic coercion and potential sabotage by rivals and competitors, China must diversify beyond traditional industries, and seek to build up a resilient middle class with salubrious household incomes. Recently, Zhang Jun, the Dean of the School of Economics at Fudan University, has proposed a "Household Income Doubling Plan" designed to tackle the difficulties in the post-COVID era.⁹ His recommendations hold significant merit.

Second, China must pursue dynamic self-sufficiency through selectively opening its economy to existing and prospective partners, whilst minimizing undue risks accrued from exposure to external actors with insidious intentions. Autonomy requires both security from foreign interference and sustainability in economic vitality. This is why Chinese regulators continually reduce barriers to trade, investment, and joint ventures with receptive and constructive international businesses. It also demonstrates that non-politicized cooperation with home-grown Chinese champions can yield stable benefits.

Chinese enterprises should seek to bolster empathetic candor and transparency in communications and engagement efforts with foreign firms, whilst adhering to national security principles. In lieu of viewing foreign-domestic partnerships as a zero-sum game with restrictive knowledge transfers, Chinese firms can afford to identify areas for joint innovation where benefits are shared, while also carefully and explicitly delineating areas where national security considerations take precedence. This delicate balance involves preventing excessive reliance on external forces whilst maintaining China's appeal as an attractive destination for foreign investors.

Finally, the best China story is one that highlights the country's resilience as an economic powerhouse based upon both the physical and virtual economies, rather than merely relying on the latter. Whether it is productivity gains contributing to the raw growth figures or broader improvements to the average quality of life through expanded infrastructural coverage, structured and methodical urbanization, or the refinement and uplifting of human capital through high-quality higher education, the ideal China story is the story of holistic development. It is this story that critically anchors the country's soft power internationally and heightens the attractiveness of its government's distinctive outcome-oriented pragmatism to countries that are wary

⁹ Jiawen Zhang and Yuxuan Jia, "Zhang Jun Advocates for Household Income Focus, Discourages Infrastructure Over-Investment," *The East Is Read*, March 22, 2024, <https://www.eastisread.com/p/zhang-jun-advocates-for-household>.

and disillusioned with the neoliberal logic oft-heralded as conventional wisdom in Western economics.

Fundamentally, as China continues to rise as a responsible global power, there is much that its leaders and people can do – together – in unleashing the productivity that remains untapped within the population.

New Quality Productive Forces: Essence, Structural Framework, and Policy Implications

Tian Kun



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At a recent gathering of the Political Bureau of the Communist Party of China Central Committee, General Secretary Xi Jinping emphatically noted that cultivating new quality productive forces is essential for advancing high-quality development.¹ This remark quickly resonated across Chinese society. Almost immediately, "new quality productive forces" emerged as a buzzword in regional development plans for 2024, quickly being hailed as the next "growth pole" for China's future.

This strategic emphasis is not merely rhetorical. Xi's mention of new quality productive forces underscores a deliberate shift aimed at harnessing the capabilities of advanced productive forces to drive the nation's modernization efforts. This directive positions new quality productive forces as a pivotal mechanism for transitioning China's growth model from rapid development to more sustainable, high-quality outcomes, a cornerstone in China's roadmap toward a modernized economy tailored to its unique situation.

Understanding the Essence of New Quality Productive Forces

New quality productive forces are not merely a buzzword but a transformative force, catalyzed by groundbreaking technological breakthroughs, innovative deployment of production factors, and deep industrial transformation and innovation. This novel form of productivity enhances total factor productivity through the optimal combination of

¹ "Xi Stresses Development of New Productive Forces, High-Quality Development," *Xinhua*, February 2, 2024, <https://english.news.cn/20240202/db7f1bd3714a4b7c8bc0835abe4c35f7/c.html>.

labor forces, means of labor, and subjects of labor—each evolving to meet the intensified demands of the modern economy.

The demands placed on labor forces, methods of labor, and subjects of labor are increasing. These three components of productive forces identified by Karl Marx remain relevant, but their roles are expanding. First, the development of human capital is crucial. Without a workforce attuned to the nuances of modern technological and industrial shifts, the potential for new quality productive forces remain untapped. Furthermore, the quality of tools employed in labor has become a crucial determinant of productivity. Emergent from the latest technological upheavals are tools that are more efficient, safer, smarter, and more environmentally friendly, thereby liberating workers from traditional constraints and elevating the potential complexity and output of labor. Third, exploring cutting-edge materials and processes expands the scope of subjects of labor, pushing the boundaries of what can be produced and how it can be done. This development is critical to defining new industrial frontiers and creating innovative production landscapes.

Crucially, the leap to new quality productive forces hinges on the efficient orchestration of the components of productive forces. On the one hand, this goes beyond mere utilization. It drives production management toward platform-based, networked, and industrial ecological transformation. On the other hand, reforming resource allocation and dismantling institutional barriers to the free flow of capital, whether human, physical, or intellectual, encourage the market to direct resources toward more efficient and profitable avenues.

In essence, new quality productive forces are about enhancing the interaction between innovation and industry, steering economic activities toward greater heights of efficiency and integration in an era defined by digital transformation.

Exploring the Structural Framework of New Quality Productive Forces

Xi recently emphasized that in the current era, digital technologies and the digital economy are at the forefront of the world's technological revolution and industrial transformation, identifying them as critical arenas in the latest round of global competition.² At its core, digital technology leverages the innovative integration of big data, algorithms,

² Xi Jinping, "Building Up the Strength, Quality, and Size of China's Digital Economy," *Qiushi Journal*, no. 2, 2022 (January 2022), http://en.qstheory.cn/2022-03/03/c_721608.htm.

and computing power to construct more efficient manufacturing systems. This integration is pivotal for upgrading industrial frameworks, transitioning energy infrastructures, optimizing energy utilization, and curtailing carbon emissions.

Xi has noted that data, as a novel production factor, exerts considerable influence over the transformation of traditional production modes.³ Therefore, effective data integration is recognized as a crucial force in fostering new quality productive forces.

The Chinese government has long prioritized the construction of digital platforms, encouraging enterprises to cooperate and implement data integration. This effort aims to promote the sharing and integration of information resources across sectors. China has also called for the establishment of multi-functional platform organizations to bolster inter-industry and inter-platform cooperation, thereby enhancing the efficient use of economic resources and propelling industrial upgrades and innovation.

In response to the government's call, many sectors have actively promoted data integration and platform construction. For instance, in healthcare, institutions have implemented electronic medical records systems and established shared medical resource platforms that facilitate the data integration of patient records while enhancing service levels. In manufacturing, the Internet of Things (IoT) has allowed real-time monitoring and optimization of production processes. In the consumer services sector, various shopping and business platforms convenient for publics have emerged.

China's efforts to build these platforms have endowed it with promising data-driven capabilities. This vast resource facilitates improvements in production and service delivery.

Notably, the proliferation of internet platforms epitomizes this trend. Chinese tech giants have forged diversified ecosystem platforms that integrate a wide array of services, enabling cross-sectoral data synthesis. This development has spurred rapid growth in the digital economy and provided expansive platforms for innovation and entrepreneurship. For example, e-commerce giants leverage big data to tailor recommendations, enhance consumer experiences, and

³ Xi, "China's Digital Economy."

drive retail evolution. Platforms like Alibaba Cloud and Huawei Cloud are transforming manufacturing by combining 5G technologies with traditional processes, resulting in smarter, more efficient production systems.

The strategic importance of these developments cannot be overstated, as they underscore a shift towards a more integrated and innovative economic model that boosts efficiency across the board and anchors China's position in the digital economy globally. The central government has crafted policies that support data integration and platform construction, cementing these as critical components of China's strategy to cultivate new quality productive forces and usher in an era of high-quality economic growth.

Policy Implications and Strategic Measures

As China forges ahead with its new quality productive forces, it is essential to understand the policy implications and strategic measures required to sustain and amplify these developments. The transformative power of new quality productive forces relies on targeted governmental actions, robust policy frameworks, and a conducive ecosystem that fosters innovation and integration across all sectors of the economy.

Enhancing Education and Talent Development

Central to the development of new quality productive forces is the cultivation of a highly skilled workforce. The Chinese government has placed a high priority on education reform and talent development by aligning educational outcomes with the demands of a digitized, innovative economy. Key initiatives aim at strengthening interdisciplinary education, integrating technical skills with traditional learning, and fostering a culture of continuous learning. Moreover, it is crucial to have targeted programs that nurture top-tier innovative talents and practical skillsets to ensure that the workforce remains competitive and adaptable to new technologies and industrial shifts.

Infrastructure and Institutional Reforms

For new quality productive forces to thrive, substantial investment in infrastructure is crucial. This includes both physical infrastructure, such

as next-generation manufacturing facilities, and digital infrastructure like widespread 5G networks and robust data centers. Institutional reforms aimed at streamlining regulations, enhancing intellectual property protections, and facilitating market entry for startups and innovative enterprises are equally important. These measures will ensure that the foundational elements of a high-quality productive force, such as data and technology, are optimally utilized and protected.

Fostering a Culture of Innovation

Government plays a crucial role in creating an environment that encourages innovation, which involves not only providing financial support through grants and incentives but also promoting a regulatory framework that allows for experimentation and tolerates a certain level of risk. Such an environment should also include robust mechanisms for collaboration between academia, industry, and government entities to facilitate the translation of research into market-ready solutions and services.

Economic and Regional Integration

To maximize the benefits of new quality productive forces, China is focused on enhancing economic integration both domestically and globally. Domestically, efforts are being made to break down regional barriers and promote a unified national market, ensuring that resources, including capital and talent, are allocated where they are most needed. Internationally, China continues to expand its global partnerships and participate in international standards-setting bodies, which help integrate its economic and technological advancements with global markets and systems.

Sustainability and Social Responsibility

As China advances its new quality productive forces, sustainability remains a core consideration. The integration of green technologies and sustainable practices into production processes is encouraged to reduce environmental impact and promote long-term ecological balance. Moreover, as digital transformations reshape industries, policies addressing potential social impacts, such as job displacement and privacy concerns, are vital. The government is tasked with implementing

social programs that assist in retraining workers and ensure the broad sharing of benefits from technological advancements across society.

In conclusion, as China navigates a transition to the realm of new quality productive forces, a comprehensive approach involving strategic policy initiatives, educational reforms, and international cooperation will be key. These efforts will not only propel China's economic transformation, but also set a benchmark for how nations can harness the potential of technology and innovation in pursuit of sustainable and inclusive growth.

China's Next Frontier: AI in the New Era

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Introduction

Amid the proceedings of the 2024 Two Sessions, an economic initiative emerged to seize the spotlight, eclipsing the once-prominent "Made in China 2025" strategy. Termed "new quality productive forces," this initiative signifies China's embrace of cutting-edge advancements, with technologies such as artificial intelligence (AI) positioned as its cornerstone. However, its scope extends beyond AI into innovations including biotechnology, quantum computing, new energy sources, advanced materials, and even ambitious ventures into deep space. In prioritizing these novel forces, China unmistakably signals a forward-looking stance, indicative of a deliberate departure from antiquated paradigms.

This paradigm shift resonates with the statements of Ni Hong, China's Minister of Housing and Urban-Rural Development, who advocated for the bankruptcy of insolvent real estate firms, thereby reinforcing the nation's commitment to progress and transformation. As China sets its sights on the future, President Xi Jinping's endorsement of new quality productive forces marks a pivotal moment in China's economic strategy. This strategic pivot, succeeding the "Made in China 2025" initiative (which was underestimated by many in the West), underscores China's trajectory in pioneering cutting-edge industries, exemplified by its strides in electric vehicles and green technologies.

However, as China charts its course toward new quality productive forces, recent revelations have cast a spotlight on challenges to progress, potentially signaling a gap with American advancements in critical technologies such as AI. While China has emerged as a global leader in digital innovation, its trajectory is beset by a complex interplay of factors, including reliance on US technology, regulatory hurdles, and broader geopolitical implications. Against this backdrop, it becomes imperative to delve deeper into various facets of China's AI strategy in the context of the new quality productive forces paradigm, including the evolving global AI landscape, China's explicit AI goals, Western perceptions and concerns, and the implications of navigating future AI competition.

The Global AI Landscape

China's emergence as a leader in 37 of the world's 44 critical frontier technologies, including AI, biotech, robotics, and quantum computing, underscores growing influence in shaping the global AI landscape.¹ These research advances could herald another generation of Chinese industrial eminence within a decade, presenting significant implications for global technology leadership and economic competitiveness.²

Amidst the challenges China is facing, the global AI landscape witnessed a proliferation of AI models and applications. Both state-approved and independently developed large language models (LLMs) are entering the market, raising concerns about content control and accuracy amidst ideological considerations. In this regard, a comparative analysis of AI regulation and development across different regions could delve into the complexities of the global AI landscape and the challenges of achieving advances on an international scale.³

The intensifying competition between China and the United States characterizes the global AI landscape, with implications for technological innovation, employment, economic prosperity,⁴ and geopolitical influence. While China has made significant strides in certain AI domains, such as computer vision and autonomous vehicles, it is recognized that it still lags behind the United States in some key breakthrough areas, such as generative AI. In this context, China's reliance on US technology in foundational AI research and development underscores the intricate dynamics of the global AI ecosystem. Moreover, the evolving regulatory

- 1 Shirley Ze Yu, "Why China's Plan for 'New Productive Forces' Should Make the West Sit Up," *South China Morning Post*, March 16, 2024, <https://www.scmp.com/comment/opinion/asia/article/3255248/why-chinas-plan-new-productive-forces-should-make-west-sit>.
- 2 "AI and Generative AI in 2023: Four Top Questions Answered," *PwC*, May 5, 2023, <https://www.pwc.com/us/en/tech-effect/ai-analytics/artificial-intelligence.html>.
- 3 Kendra Schaefer, "The Rise of AI in China – Digital Technologies and Their Regulation," November 14, 2023, in *The Future of Work Podcast*, produced by International Labour Organization, podcast, <https://voices.ilo.org/podcast/the-rise-of-ai-in-china--digital-technologies-and-their-regulation>.
- 4 Xiang Hui, Oren Reshef, and Luofeng Zhou, "The Short-Term Effects of Generative Artificial Intelligence on Employment: Evidence from an Online Labor Market," *Social Science Research Network*, January 1, 2023, <https://doi.org/10.2139/ssrn.4527336>.

landscape, trade tensions, and strategic considerations are shaping the contours of AI competition beyond scientific spheres and entering a political arena on the global stage, presenting both opportunities and challenges for stakeholders.⁵

Indeed, the advancement of AI technology in leading countries such as the United States and China also holds immense potential for countries striving to bolster their economic and social development,⁶ providing actionable insights for developing countries in the Global South. By examining the performance of leading nations in AI development, it may be possible to elucidate the critical factors underpinning success and translate these lessons into practical recommendations for policymakers.

For instance, the rapid evolution of AI technology has been propelled by significant advancements in algorithmic development, computational power, and the availability of vast datasets. These developments have catalyzed positive impacts across various sectors, including increased productivity, the emergence of new industries, and improvements in healthcare and education. However, they also raise concerns regarding job displacement, inequality, privacy risks, and biases, necessitating strategies to harness the benefits of AI while mitigating its risks.

A comprehensive overview of the current AI rankings, including AIRankings, Stanford HAI, Oxford Insights, and Tortoise Media, offers insights into the key measures that different nations could focus on to foster AI development. Metrics such as research publications, patent filings, investment levels, and policy initiatives can elucidate the factors contributing to AI leadership. Moreover, collaborative efforts between academia, industry, and government, as well as the role of regulatory frameworks in fostering AI innovation, are also key in this regard.

For instance, China has managed to leverage its AI-related publications effectively, totaling an impressive number of 15,051 in the past ten years. This is double that of its nearest competitor, the United Kingdom (6,533), but still falls behind the United States (32,205).⁷ Still, China ranks a close second to the US in measures related to AI infrastructure, research, and commercial aspects, scoring particularly high in AI development.⁸ However, it is noteworthy that while China has reached second place in absolute metrics, it has not achieved the same when measuring AI

5 Kai-Fu Lee, *AI Superpowers: China, Silicon Valley, and the New World Order* (Boston: Houghton Mifflin, 2018).

6 Lareina Yee and Michael Chui, "The Economic Potential of Generative AI: The Next Productivity Frontier," produced by McKinsey & Company, June 21, 2023, video, <https://www.mckinsey.com/featured-insights/mckinsey-live/webinars/the-economic-potential-of-generative-ai-the-next-productivity-frontier>.

7 "AI Institute and Author Rankings by Publications," AIRankings, accessed April 15, 2024, <https://airankings.org/>.

8 "The Global AI Index," Tortoise Media, accessed April 15, 2024, <https://www.tortoisemedia.com/intelligence/global-ai/#rankings>.

metrics per capita. This highlights the relevance of other countries such as Singapore and Switzerland in the field, but it also opens the door for significant further development if Chinese human capital and talent in AI are managed and fostered successfully in the years to come.

Overall, by learning from leading nations and leveraging international collaboration, countries can chart a path toward AI-driven innovation and inclusive growth, enhancing their competitiveness in the global AI landscape. This is also a key consideration in the AI race,⁹ as those who lead become the examples followed by the rest, and thus have an immense responsibility in shaping the paths they build.

Reflections on China's AI Goals

At the forefront of the new Chinese strategic vision for the future lies a multifaceted approach encompassing various domains. This comprehensive strategy revolves around achieving three pivotal objectives: furthering domestic technological innovation, accelerating industrial adoption, and bolstering strategic defense capabilities.

China has articulated bold aspirations to position itself as a global AI leader by 2030, evident in its national policy initiatives and substantial investments in AI research and development. Central to China's AI strategy is the pursuit of breakthroughs in generative AI and other key domains, aimed at fueling innovation, boosting productivity, and catalyzing economic expansion. However, achieving these objectives hinges on navigating a complex regulatory landscape, surmounting technological hurdles, and nurturing indigenous AI capabilities. Despite significant strides, China grapples with the challenge of balancing its ambitions for AI advancements with concerns surrounding data privacy, regulatory compliance, and geopolitical tensions.

In this context, despite the concerted efforts of state agencies and private tech firms, China faces some challenges in its AI endeavors, particularly concerning computing infrastructure and access to semiconductors crucial for training AI models. Challenges abound in pursuing high-parameter models, exacerbated by a diverse array of locally developed chips, and worsened by US tech sanctions that limit semiconductor procurement.

⁹ Paul Mozur, John Liu, and Cade Metz, "China's Rush to Dominate AI Comes with a Twist: It Depends on US Technology," *The New York Times*, February 28, 2024, <https://www.nytimes.com/2024/02/21/technology/china-united-states-artificial-intelligence.html>.

Western Perceptions and Concerns

China's goals concerning AI and other facets of the new quality productive forces prompt several inquiries about how the West perceives China's ability to execute this strategy, and how the West will respond to its implications globally. Indeed, there are numerous hurdles confronting China's AI endeavors, ranging from theoretical complexities to technological limitations. For instance, it has been specifically noted that China's role in AI development underscores issues of self-sufficiency and innovation, as well as its lag behind the United States in the field.¹⁰ Furthermore, the United States closely monitors China's progress in AI development, often expressing concerns about potential risks and ethical implications.¹¹

While China is not yet the global leader in the field, ranking second to the United States in most AI metrics, Chinese strategies on the matter have been misunderstood. This resembles misunderstandings of China's past strategies such as "Made in China 2025," which contributed to China's achievements in electric cars and green technologies. Critics may dismiss this rhetoric as a veiled attempt to mask economic vulnerabilities, but history proves otherwise. The inception of China's electric vehicle industry, coinciding with the introduction of "Made in China 2025," exemplifies the nation's prowess in translating strategic objectives into tangible industrial achievements. Within a decade, China transformed from a rudimentary industrial power to a global leader in high-end manufacturing, epitomized by the meteoric rise of EV giants like NIO, Xpeng, and Li Auto.

However, this newfound success has not been achieved without challenges. Western nations, alarmed by China's ascendancy, are increasingly scrutinizing Chinese industries, citing concerns over subsidies, data security, and fair-trade practices, and have conducted retrospective investigations. Despite this, China forges ahead, cultivating a new generation of technological innovators that could redefine global industrial landscapes. Time will tell which side achieves more advancements in the next few years; nevertheless, competition, so long as it is transparent and fair, will surely ignite the best developments for each side.

10 Ben Jiang, "China Said to Fall Short of Matching US Advances in AI Owing to 'Many Challenges in Theory and Technologies,'" *South China Morning Post*, March 15, 2024, <https://www.scmp.com/tech/big-tech/article/3255545/china-said-fall-short-matching-us-advances-ai-owing-many-challenges-theory-and-technologies>.

11 Colleen McClain et al., *How Americans View Data Privacy* (Washington, D.C.: Pew Research Center, 2023), https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2023/10/PI_2023.10.18_Data-Privacy_FINAL.pdf.

Conclusion and Navigating the Future

As China pivots toward the new quality productive forces, seeking rapid advancements in AI and other sectors, it challenges traditional notions of industrial leadership. As China unveils its new strategy, the imperative for Western nations to constructively engage with China's industrial strategies becomes increasingly relevant. China's current blueprint for new quality productive forces could signify a paradigm shift in global economic dynamics. By embracing frontier technologies and fostering a culture of innovation, China could set a course toward sustained economic preeminence, potentially inspiring other nations to follow suit in the years to come.

In this context, as China pursues its AI ambitions, collaborations between research institutions and tech companies like Zhipu AI aim to overcome hurdles and propel innovation forward.¹² Despite challenges, the commitment to AI development remains unwavering, with significant investments and advancements shaping the future of AI both domestically and globally.¹³ Reflecting on the evolving dynamics of AI development and regulation, it is crucial to underscore the importance of dialogue and collaboration amongst stakeholders. While competition is essential, fostering an environment that encourages collaboration is vital in addressing emerging challenges and charting a path toward a more equitable and sustainable digital future.

In navigating the future of competition in the new quality productive forces, particularly in the realm of AI, between China and the United States, strategic foresight and policy agility will be paramount. Collaborative efforts and multilateral engagements will be beneficial in addressing concerns related to data security, intellectual property rights, AI ethics, and potential threats posed by artificial general intelligence (AGI). Fostering an environment conducive to innovation, enabling ethical AI practices, and addressing societal implications are critical imperatives for sustainable technological advancement. While the current global landscape suggests an AI race, a more holistic multilateral approach that balances innovation with international responsibility would be intriguing to observe, at least to a certain extent. With the AI genie now out of the bottle, time will tell which nation will further develop this technology, ideally with a sense of responsibility that could guide other countries in the future.

¹² Yu Cheng, "Experts Confident Nation Can Close Sino-US AI Gap," *China Daily*, March 21, 2024, <https://www.chinadaily.com.cn/a/202403/21/WS65fb6c00a31082fc043bdd09.html>.

¹³ Weilan Zhang, "Beijing Launches AI Public Platform as Demand Mounts for Computing Power," *Global Times*, April 8, 2024, <https://www.globaltimes.cn/page/202404/1310215.shtml>.

TIO Spotlight Talk



Green Economy, Digital Economy, and New Quality Productive Forces

An Interview with Charles Liu Yangsheng

Charles Liu Yangsheng



- Senior Fellow of Taihe Institute
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TIO The concept of "new quality productive forces" has gained significant attention both domestically and internationally. How would you interpret this concept?

Liu This concept can be interpreted from various perspectives. Firstly, since "productive forces" are related to manufacturing, the idea of "new quality productive forces" means enhancing manufacturing efficiency to improve production capacity. This involves intelligent production, automation, new materials, and so on.

Additionally, "new quality" embraces green concepts such as environmental protection and energy saving. From a macro perspective, it also refers to improving the efficiency of the entire supply chain, by introducing new materials and new technologies and optimizing operational efficiency. Ultimately, the goal is to increase production efficiency, reduce production costs, and offer enhanced experiences for humanity while conserving resources.

TIO To implement this initiative, the Chinese government has outlined a general direction and focused on certain sectors including the digital economy. Also, it has been 10 years since China proposed the Belt and Road Initiative, and an important part of it is the Digital Silk Road. How do you envision new quality productive forces contributing to the digital economy?

Liu We should take two aspects into consideration. First, we should acknowledge the fact that Belt and Road countries are at different stages of development. For less developed countries, the Belt and Road Initiative has provided crucial infrastructure over the past 10 years. Meanwhile, more advanced countries are focusing on digital infrastructure, encompassing technologies like 5G, the Internet of Things (IoT), and advanced data analytics and algorithms, and they are working with China. For example, the United Arab Emirates (UAE) has established a university dedicated to AI and is the only country in the world that has a governmental AI ministry. These advancements also hinge on robust infrastructure, including extensive data centers, sufficient power generation, and affordable electricity. Therefore, China's cooperation with Belt and Road countries in enhancing infrastructure could greatly enhance productivity and innovation in these regions.

Second, the digital yuan. The increasing trade volume between the Middle East and China highlights the significance of adopting the digital yuan. If the digital yuan is realized, there is no need to convert yuan into dollars, and then convert dollars into local currencies, leading to lower costs and higher efficiency. Thus, the digital yuan plays a crucial role in the digital economy. Qatar has established a clearing center for the Chinese yuan; the Central Bank of the UAE (CBUAE) and the People's Bank of China (PBC) are working together to test means of circulation for the digital yuan. In addition, ASEAN countries are also cooperating with China in this realm; there are ongoing discussions between China and the central bank of Singapore regarding the development of the digital yuan. So in the next stage, the digital yuan will become part of the digital infrastructure, and some of the more advanced Belt and Road countries have been moving in this direction.

TIO As you mentioned, the "new quality" framework also endorses green concepts. As Chinese companies expand their global footprint, what are your thoughts on how Chinese companies are navigating and implementing corporate social responsibility (CSR) and environmental, social, and governance (ESG), as advocated by the international community?

Liu I may hold a different opinion from most on this matter. The concept of ESG was initially proposed by Western governments to criticize and discredit China. They criticized China for pollution without mentioning how much damage has been done to the atmosphere by the Western industrial revolution, spanning over two centuries. However, China has done a very good job of managing pollution, as seen in Beijing's improved air quality over recent years. So later, the narrative around ESG shifted. Instead of being a tool for discrediting China, it now serves as a "common value" that China must follow to access Western capital markets and is

proposed by Western accounting and law firms so that in the end, they gain profits by providing consulting services. Therefore, while I strongly support the green economy and have made investments in it for a decade, I do not fully agree with the frameworks of ESG and CSR.

The standards set by Western countries over the past two centuries do not fully apply to countries at different stages of development. For instance, the United States has been criticizing China for providing foreign aid in building thermal power plants in developing countries and causing pollution. However, many of these countries are unlikely to have enough capital to invest in non-thermal power generation without aid. It would be unethical to deny the people of India and Africa electricity because they lack the resources to develop nuclear power. Indeed, a green economy is crucial for the world and should be actively pursued, as climate change is a reality that poses significant dangers to our planet, but the specific standards are subject to debate.

TIO Some of the commentary on new quality productive forces in Western media has been negative. One of the criticisms raised is that China's new quality productive forces could lead to overcapacity. How do you interpret and assess this view?

Liu Just like how ESG was initially proposed, any Chinese initiatives would quickly meet with crackdowns led primarily by the US. From the Western paradigm, as long as China increases production capacity, reduces costs, increases profits, and expands market share, China is causing "overcapacity." For example, China's electric vehicles (EVs), one of China's globally competitive "new three" products and a significant manifestation of new quality productive forces, are experiencing the most severe scrutiny. However, China's share in the US EV market is 0%, and in the European EV market, China stands at 8%. This is the result of tariffs. The United States has imposed a 27.5% tariff on Chinese EVs, and Europe is also ready to impose strict tariffs. Because China's EVs are far ahead in quality, price, and other aspects, the US and Europe cannot compete and can only resort to protectionist measures.

So it is absurd to accuse China of overcapacity. Even with the 27.5% tariff imposed by the US, China's production capacity may still struggle to keep up with the aggressive global market demand. Take the newly launched Xiaomi's electric car as an example; it is much superior to that of Europe and the US in terms of pricing and relative performance.

When China proposed the "Made in China 2025" strategic plan, the United States began to suppress China in various fields, with methods including a trade war,

a science and technology war, and now a financial war. This suggests that the "overcapacity" narrative is indeed part of a broader strategy aimed at containing China's development.

TIO Despite the negative comments, the introduction of new quality productive forces does interest governments, businesses, and economists worldwide, including those in Western countries. How do you expect China's development of new quality productive forces to boost foreign investment confidence and promote cooperation with other countries and regions?

Liu There are two aspects involved. First, what implications does this concept hold for other countries, particularly concerning its impact on foreign capitalists and large corporate groups? Despite Western reports last year of a decline in foreign investment in China, analysis reveals a nuanced picture. Whilst financial capital investment may have decreased, industrial capital investment has seen an increase. For example, Germany recorded its highest-ever direct foreign investment into China last year, primarily directed toward manufacturing sectors. The decline in financial capital investment can be attributed to two causes. Firstly, the high interest rate on dollars has incentivized more dollar exchanges, affecting investment patterns. Secondly, the US government has publicly claimed to restrict financial capital investment in Chinese companies, contributing to their financial withdrawals. Overall, regardless of the specific call for new quality productive forces, Chinese industries' high efficiency will continue to attract foreign countries to invest in China's industrial and manufacturing sectors.

Second, opportunities arising from new quality productive forces can be considered from many angles across different industries and fields. For example, ASEAN economies are increasingly integrated into China's economic supply chain, leveraging the economies of scale of China's vast market, instead of pursuing economic decoupling as desired by some Western governments. In the manufacturing sector, no single country can produce an entire cellphone, but a country may produce several components; similarly, no single country can produce an entire electric car, but they may produce some components. Therefore, part of the success of China's supply chain should be credited to ASEAN countries as well as some South Korean and Japanese companies. Their participation contributes to the formation of China's comprehensive, advanced, and highly efficient industrial supply chain. This situation presents a clear opportunity for other countries: aligning with China's development trajectory can lead to a win-win situation.

This interview was conducted by Song Xiaofeng, Editor-in-Chief of Taihe Institute.

In

Focus



Digital Currencies and Multipolar Possibilities

Warwick Powell



• Senior Fellow of Taihe Institute

The changing patterns and composition of cross-border trade have long laid foundations for the emergence of "currency multipolarity." The emergence of digital currencies and associated supply chain digitalization in the 2020s adds to these foundations and provides additional capabilities. Combined, these and other related forces are reshaping the global financial architecture and economic system. Historically established patterns of center-periphery relationships are now undergoing transformation. A global system in which the United States has occupied the central position for about a century has undergone profound change, so much so that in a number of aspects, it is no longer conceivable that a single center-periphery configuration remains. Aside from military preponderance, there is some doubt that the US is no longer able to dictate the flow of global value on a unilateral or *carte blanche* basis.

The progressive emergence of currency multipolarity is one dimension of this systemic decentering. Currency multipolarity denotes a situation in which trade can be increasingly denominated and settled in a range of national currencies. In such an evolving and fluid environment, currency multipolarity is arguably a more accurate and less "loaded" descriptor than the frequently used notion of "dedollarization." Dedollarization certainly points to one aspect of contemporary economic realities, namely the reduced role of the US dollar (USD) in international settlements and, to a lesser extent, in international development

finance. However, the notion also tends to imply a change involving a one-for-one replacement, suggesting that another national currency will take its place. Hence, we see the debates about the USD versus the RMB. On the contrary, currency multipolarity speaks to a systemic evolution, in which reduced usage of the USD is one element coupled with the growing use of a range of other national currencies.

Economic digitalization, including the emergence of digital currencies, creates conditions that are conducive to the evolution towards a multi-currency global trading system. In some respects, digitalization is the capstone of a decades-plus process of institutional development, resulting in the progressive design and implementation of an "architecture of currency multipolarity." This alternative system can run in parallel to the existing post-Bretton Woods USD-dominated global financial system. It can function within or adjacent to the existing system, offering trading parties and nations options depending on specific transaction requirements and risk management imperatives.

So, how are we to understand the dynamics at work, and what does the emerging configuration look like?

Money and Systems of Value Flow

It may seem trite, but I will begin with a simple conceptual discussion about the nature and functions of money, otherwise some more detailed reflections later on may not make so much sense.

The analysis starts with the production and trade of goods and services. It is the exchange of goods and services in a system of intensified international division of labor, which gives rise to money's function as a *means of payment and circulation*. The existence of money is thus intrinsically linked to a system characterized by a social division of labor. The exchange of goods and services takes place across space and time. The time gaps between the different "swaps" that are taking place across a large-scale system, together with the non-coincidence of wants between transacting parties, mean that a fungible medium of exchange is necessary to "plug the gap." This function is fulfilled by money.

By fulfilling the function of means of payment, money is then able to fulfil the other functions, that are ascribed to it by conventional monetary theory. Because money can be exchanged for goods and services, it can therefore be used as a store of value. In fulfilling the medium of exchange function, money, by definition, also acts as a unit of account, providing a standardized measure for evaluating the value of various goods and services. This standardized measure, often referred to as a *numeraire*, facilitates the exchange of non-fungible items by establishing a common denominator for value comparison.

Money is fundamentally a part of an overall economic system in which value is exchanged. We can think of this as a system of value flows, with goods and services moving in one direction in exchange for money moving in the other. Goods and services are acquired either for direct consumption or as part of a production process. For exchanges to take place, the buyer will need to have sufficient money liquidity to complete the settlement at the agreed time. This liquidity can come from either reserves or loans. Without access to the relevant settlement currency, the transaction would fail.

In large-scale complex economic systems with innumerable transactions happening continuously, money remains in constant circulation as long as goods and services are in motion. However, some agents, such as enterprises or households, may accumulate money over time instead of using it immediately. Money is, therefore, temporarily removed from the circuits of production and exchange. When this takes place, money "out of circulation" enters new networks by way of deposits, investments in fixed capital, or purchasing financial instruments and other forms of securities.

Hoarded money forms deposits in savings institutions. As deposits, money is leveraged by lending institutions to create new supplies of money through fractionalized lending. Credit is the creation of a new money supply. Deployed through investment instruments, money is exchanged for securities such as mortgages, ownership, assets, or some other forms of *fictitious capital*. Fictitious capital is a legally enforceable claim on future value. Government bonds, corporate bonds, company shares, units in a unit trust, commodity futures, etc., are all forms of fictitious capital. Fictitious capital can be exchanged prior to its potential realization through the mechanisms of productive valorization. The

ability to exchange fictitious capital is the condition precedent of speculation.

Because value flows through trade are perpetual and dynamic, systemic balance is continually calibrated through movements in liquidity via networks of fictitious capital. These networks are usually associated with deep and broad markets through which such securities can be readily exchanged for money. When this happens, money can then be committed to fixed capital investment or re-enter the circulation of commodities as a means of payment.

USD Hegemony

The USD has fulfilled the role of international numeraire since the Bretton Woods accord in 1944. While the British pound continued to play an important role in international trade settlements amongst members of the Commonwealth in the immediate post-World War II years, the global system progressively evolved towards what became euphemistically described as a USD hegemony. Central banks have maintained large reserves of USD to facilitate the settlement of trade accounts, when companies in those countries imported goods and services from America and elsewhere.

The relevance of the USD to the global system has been underpinned by the historic strength of the US as a producer of goods and services. However, over the past four decades, the US has become a trade deficit nation, with China surpassing it as a global manufacturing powerhouse.¹

The US now finances its imports through the issuance of new money and the circulation of USD from creditor nations through US Treasuries. The US has been able to use USD to settle its imports in most, if not all, cases historically. The second pillar for USD hegemony has been how USD flows through the global military economy, by way of (a) US military bases in third-party countries (funded with USD, which is then recycled in the "host" country into the local currency, and then via central banks into US Treasuries), and (b) the sale of American arms, which must be settled in USD. Vendor finance is often provided in these cases, via lend-lease schemes, whereby the buyer is required to repay the vendor loan in USD. The third pillar is that the USD has been, since the mid-1970s, the only currency that could be used for the purchase of oil from the

¹ Brian Reinbold and Yi Wen, "Historical US Trade Deficits," *Economic Synopses* 2019, no. 13 (January 1, 2019), <https://doi.org/10.20955/es.2019.13>.

Middle East (West Asia). As oil is a necessity for all economies, countries have had to secure and maintain USD reserves to settle accounts for the purchase of oil.² This became known as the "petrodollar."

As the US became a trade debtor nation, other nations began to accumulate large volumes of USD. These surplus reserves are either held as reserves or recycled by way of fixed capital investments or the purchase of fictitious capital instruments denominated in USD, such as US Treasuries or Government bonds, on which a coupon rate is earned. Trade creditor nations are lending USD back to the United States.

This system of international circulation is supported by an interbank messaging system, known as SWIFT. SWIFT is a communications standard that supports the exchange of messages between banks to make ledger adjustments as required. Unless these messages can be sent and received, the settlement of accounts using whatever currency is agreed would not be possible.

The ubiquity of the USD in cross-border settlements was premised on the petrodollar regime and the need for countries to accumulate USD to settle USD-denominated debts. This was the case not only for defense procurement-related debts, but also for development finance for many developing nations, often denominated in USD and provided by global finance agencies. Access to SWIFT was a necessary condition of USD utility.

Declining USD Reserves

These conditions have now begun to erode. The unilateral weaponization of the USD and associated institutions by way of sanctions, freezing of assets, and prohibition from use of the SWIFT messaging platform has increased the risk of holding USD reserves. As a store of value, a currency has "value in potentia" only if the risk of not being able to put it into circulation in the future is negligible to non-existent. As soon as there is a risk that dormant currencies could be confiscated or blocked from entering value exchange circulation systems, there are understandable reasons to reduce one's holdings of that particular store of value. The evidence shows a progressive decline in the holdings of USD by central banks around the world.³

2 According to current OPEC estimates, 79.5% (1,243.52 billion barrels) of the world's proven oil reserves are located in OPEC member countries, with the bulk of OPEC oil reserves in the Middle East, amounting to 67.2% of the OPEC total. See: "OPEC Share of World Crude Oil Reserves, 2022," OPEC, accessed April 16, 2024, https://www.opec.org/opec_web/en/data_graphs/330.htm.

3 Alexandros Mandilaras, "Why the World Is Turning Away from the US Dollar," *The Conversation*, January 12, 2024, <https://theconversation.com/why-the-world-is-turning-away-from-the-us-dollar-220093>.

The decline is not a singular event, but a gradual ebbing of system dominance. Given the stock of USD within the global financial system, the United States' ongoing significance in trade, and the centrality of US fictitious capital in global networks, it is unlikely that dedollarization would manifest as a singular "big bang" event. Instead, it is part of a gradual process within currency multipolarity.

One piece of evidence is the decreasing proportion of central bank reserve holdings held in USD as noted. Another dimension is the changing nature of the cross-border exchange of commodities, whereby transacting parties are increasingly exploring the use of non-USD or national currencies to settle the trade. The use of China's RMB now accounts for almost 6% of global trade settlements,⁴ a near-tripling from September 2020.⁵ This is a remarkable expansion in such a brief period. We have also seen a near-complete dedollarization of trade involving Russia since sanctions were imposed in early 2022. Almost all of Russia's trade is now settled in ruble, yuan, and rupee amongst other currencies. The catalyst of this change was, of course, sanctions; but the material foundations that make the use of national currencies possible are actually the underlying flow of commodities and services. Russia's trade has not slowed down since the sanctions. As more national currencies enter into circulation, this will likely catalyze new value flows in goods and services in which these currencies act as means of payment and circulation. In other words, expanded flows of commodities and services amongst countries create the material conditions that enable the emergence of expanded use of non-USD payments.

Dimensions of Currency Multipolarity

The ability for nations to engage in expanded non-USD cross-border settlements is made possible by an array of infrastructure that has emerged over the past decade or so.

The first of these is the establishment of a network of bank-to-bank bilateral swap arrangements. This ensures the availability of liquidity in the requisite national currencies to enable settlements to take place. For example, the People's Bank of China (PBC) has established bilateral currency swap agreements with over 40 foreign central banks or monetary authorities. Of these, 31 are active with cumulative volumes in play of around 4.16 trillion yuan (about 586 billion USD).⁶ Such swap

4 "China Cross-Border RMB Settlement: Accumulation: Trade," CEIC, accessed April 16, 2024, <https://www.ceicdata.com/en/china/crossborder-rmb-settlement/crossborder-rmb-settlement-accumulation-trade>.

5 Phyllis Papadavid, "The Renminbi Overtakes the Euro as a Trade Settlement Currency as Its Use in Global Trade Finance Accelerates," *Asia House*, October 26, 2023, https://asiahouse.org/research_posts/the-renminbi-overtakes-the-euro-as-a-trade-settlement-currency-as-its-use-in-global-trade-finance-accelerates/.

6 "China's Central Bank Signs 40 Currency Swap Agreements with Foreign Counterparts," *Xinhua*, February 16, 2024, <https://english.news.cn/20240216/3df9352a2bcf4d9f8bdd317233fd321e/c.html>.

agreements have been progressively put into place as a risk mitigation reaction to the global financial crisis of 2008. Indeed, currency liquidity arrangements were implemented across Asia after the Asian financial crisis of 1997 to mitigate against future exposure to USD foreign exchange risks.

Bilateral swap arrangements are buttressed by the development of alternative interbank messaging systems or settlement platforms as alternatives to SWIFT. China, Russia, India, and others have developed their own messaging and payment platforms. Transactions messaged across these alternative networks are not tracked on SWIFT, so precise data on their impact is yet unavailable.

We are now seeing the emergence of digital currencies. There are over 100 central bank digital currency (CBDC) projects taking place globally, at various stages of development and maturity.⁷ China's digital RMB initiative is one of the most advanced, having been in active "real life" trial deployment for the past few years and now being recognized as part of the official money supply, being accounted for in M0. The future rollout of the digital RMB will take place within the context of this monetary policy envelope. Digitalization makes cross-border interoperability a more efficient and lower-cost possibility. Aside from censorship risks, one of the bitter complaints about SWIFT is related to the cost and elapsed time for payment finality. Digitalization holds the potential to drive transaction costs down to near-zero, and settlements can in theory be instantaneous.

Digital currencies have other attributes that can play important roles in cross-border trade settlements. They can, for instance, be programmed at either the currency or wallet level, depending on the specific technical design. Programmable means of payment can support streamlined trade settlements as well as buttress supply chain integrity by aligning payments with compliant data conditions and mitigate against money laundering and other illegal practices.

As noted earlier, the flow of money is the counterpart to the flow of goods and services. Funds are released when transaction conditions are satisfied, which are essentially information or data points. Historically, these conditions have been captured in physical form like reports and trade documents, but digitalization allows for secure, multiparty access

⁷ "Today's Central Bank Digital Currencies Status," CBDC Tracker, accessed April 17, 2024, <https://cbdctracker.org/>.

to this information. Digitalized supply chain data, collected, validated, stored, and shared in the context of distributed ledger platforms such as blockchains, can be queried to drive financial settlements or supply chain payment drawdowns. The satisfaction of specified data performance conditions can trigger automated actions, including payments. If the flow of funds is the counterpart to the flow of goods and services, the connector is the flow of information. Efficient data flows can expedite the flow of money and reduce the total stock of capital required to drive the production-circulation system at large. My own case studies suggest that savings of at least 18% in the total circulation of money could be achieved through improved information flows.

China is a global leader in the application of blockchain technologies to supply chain data systems.⁸ The beauty of such systems is that they are, by design, consensus-driven and resistant to capricious censorship by single actors, offering a stark alternative to the USD SWIFT system that dominated global trade for decades.

Furthermore, all founding member countries of BRICS are well advanced with their respective CBDC initiatives. They have also agreed that a BRICS payments system, utilizing national currencies, will be a key project in 2024. Digitalization in many ways makes national currency-based systems easier to operate, as an agreed numeraire and adjustment mechanism can be digitized and supported via algorithms. This enables real-time calculations of equivalence, reducing foreign exchange risk.

Fictitious Capital and Finance for the Real World

So far, the discussion has focused on national currency-denominated trade settlements, but there is also a need for mechanisms to address non-circulating currencies. I will leave the issue of imbalances aside for this essay, and simply conclude with a short discussion on new capital markets for the circulation of money when not engaged in the settlement of trade.

Accumulated currencies can be held dormant or circulated via investment in fixed capital or fictitious capital. Fictitious capital circuits have been dominated by US instruments and markets backed up by European markets. However, over the past two decades, Asian capital markets have grown to replace those of Europe as critical platforms

⁸ Warwick Powell, *China, Trust and Digital Supply Chains: Dynamics of a Zero Trust World* (London: Routledge, 2023).

for the channeling of financial capital. Asian capital markets, including China, Japan, and Korea, have distinct characteristics from those of the transatlantic capital markets.⁹ These differences are mainly to do with the fact that Asian capital markets are much more aligned to state policy-driven priorities, such as industry development.

The policy-driven nature of Asian capital markets can be said to focus on the integration of capital circuits with the dynamics of the so-called "real economy." That markets for fictitious capital are prone to significant speculation has raised concerns about the extent to which monetized wealth creation through fictitious capital speculation is detached from the valorization possibilities of the real economy. It is often argued that these constraints limit the value of national currencies, like the RMB, because of their limited or restricted convertibility. The inability to freely trade RMB is raised as one reason why the RMB could never replace the USD.

My argument would suggest that this is something of a moot point. Firstly, the system changes are not seeing a like-for-like replacement of the USD by one other national currency. Secondly, a digitalized world makes cross-border settlements in national currencies - without an intermediating currency as numeraire - a low-cost possibility. There is no need for the USD as such to enable an exchange of equivalence to take place. Because of these conditions, should any country accumulate a large proportion of a particular country's currency, the question is how is this circulated outside of the movement of goods and services? A case in point could be, for example, Saudi Arabia progressively receiving more RMB as RMB-denominated purchases of oil grow into the future. What would Saudi Arabia do with its RMB reserves, should they exceed their import requirements from China?

Institutional and financial product reforms are addressing challenges like these. The Shanghai Stock Exchange and the Saudi Tadawul Group (STG) announced a cooperation memorandum of understanding (MOU) on September 3, 2023, to explore "opportunities in cross-listing, fintech, ESG, data exchange, and research, as well as promote diversity and inclusion in both markets." The partnership will also "facilitate knowledge sharing in listing businesses, dual-listings of exchange-traded funds (ETFs), and investor relations initiatives, while developing the infrastructure of both capital markets."¹⁰ The Shenzhen Stock Exchange

9 Johannes Petry, "Same Same, but Different: Varieties of Capital Markets, Chinese State Capitalism and the Global Financial Order," *Competition & Change* 25, no. 5 (November 1, 2020): 605–30, <https://doi.org/10.1177/1024529420964723>.

10 "Shanghai Stock Exchange Signs MoU with Saudi Tadawul Group," *Shanghai Stock Exchange*, September 4, 2023, <http://english.sse.com.cn/news/newsrelease/c/5726018.shtml>.

has also entered into a similar collaboration agreement with the STG.¹¹ This is not the only such agreement to enable cross-jurisdiction capital market alignments, which would support a policy-driven flow of finance across jurisdictions as the balancing mechanism for trade surpluses. The Hong Kong Stock Exchange is also collaborating with a number of exchanges in West Asia.¹²

The growth of the Chinese government bonds market is another piece of the puzzle, with the bonds specifically earmarked for funds to be used in specific real economy activities. Lastly, ongoing reforms in China's pension, financial services, and wealth management sectors are likely to contribute to the creation of instruments aligned with the circulation needs of national currencies (especially the RMB) as a means of payment in international trade.

Concluding Thoughts

This essay has only scratched the surface, but has outlined some of the key issues and dynamics that are part and parcel of the evolution of the global economic system. While the digitalization of currencies is an important feature, I have decided to situate this aspect within a broader context. The issues at stake aren't about technology *per se*, though technology can often make certain forms of institutions easier or more efficient. This is certainly the case with the growing use of national currencies in cross-border trade settlements.

The transformation of the global economic system is less about the replacement of one center with another. Rather, the dynamics at work, I would suggest, point to a system decentering. Decades of transformation in trade flows and the emergence of China as the world's "sole manufacturing superpower" have presaged the decentering of the US.¹³ The legacy of USD primacy is progressively ebbing. The risks of dependency on a currency and settlements system prone to capricious unilateral sanctioning are high and growing. A shift to national currencies is seen as a bulwark against these risks.

A maturing architecture of currency multipolarity is emerging. The critical pieces are already in place: bilateral swap agreements, bank-to-bank messaging or payments systems separate from SWIFT, digital currency platforms, and a growing array of fintech solutions in supply

11 "Saudi Tadawul Group and Chinese Shenzhen Stock Exchange Sign MoU to Boost Cooperation," *Arab News*, December 11, 2023, <https://www.arabnews.com/node/2424046/business-economy>.

12 John Benny, "Hong Kong Stock Market Seeks Pacts with Middle East Bourses amid IPO Boom," *The National*, October 26, 2023, <https://www.thenationalnews.com/business/markets/2023/10/26/hong-kong-stock-market-seeks-pacts-with-middle-east-bourses-amid-ipo-boom/>.

13 "China Is the World's Sole Manufacturing Superpower: A Line Sketch of the Rise," *CEPR*, January 17, 2024, <https://cepr.org/voxeu/columns/china-worlds-sole-manufacturing-superpower-line-sketch-rise>.

chains that exist today. Ongoing institutional development and cross-border alignment to support capital flows is also an emerging feature of today's landscape. As countries use currencies other than USD for trade settlements, alternative capital circuits will be needed. The Asian experience suggests that these circuits and markets are likely to be more "policy-driven," with alignments to the priorities of the real economy over the speculative imperatives of finance capital.

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