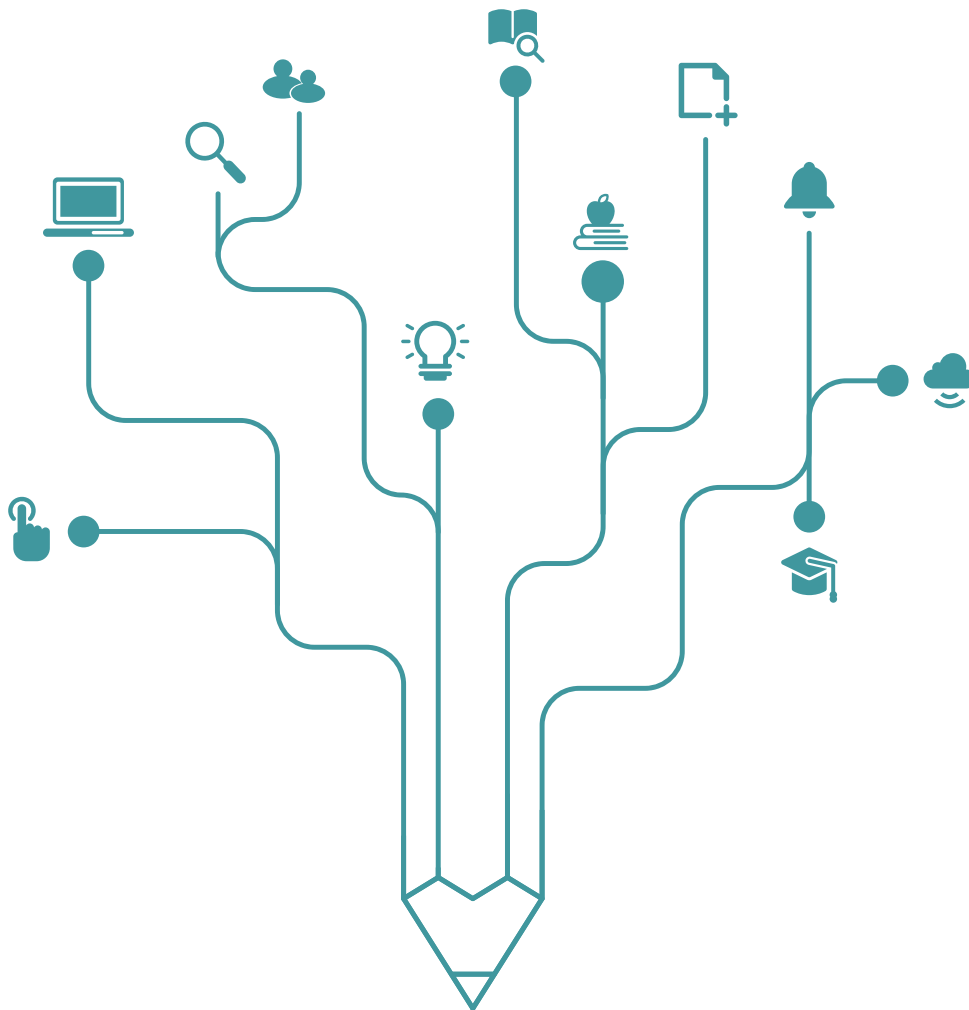


Developing Modernization Indicators for the People's Republic of China : Key Considerations and a Proposed Framework

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ABBREVIATIONS

GDP	–	gross domestic product
NRCS	–	National Research Council for Economics, Humanities and Social Sciences
OECD	–	Organisation for Economic Co-operation and Development
PRC	–	People's Republic of China

ABSTRACT

This paper proposes an indicator to assess the progress being made in the modernization journey of the People's Republic of China (PRC). In doing so, it fills a gap. The paper applies the modernization indicator—structured on thematic categories, subcategories, and intersections—to the PRC, whose performance is compared with Organisation of Economic Co-operation and Development and G20 countries. The PRC's best score was for the functioning and efficiency of markets and the worst for inclusiveness. Here, it led a global trend for a weak performance on this measure of modernization. The paper examines four major policy implications from the modernization challenges facing the PRC: (i) economic governance reform to secure inclusive and sustained growth, which enhance social cohesion and stability; (ii) the governance building that will be needed to achieve the complex task of modernization; (iii) public sector reform should be guided by widely accepted values, such as transparency, accountability, efficiency, and providing high-quality public services; and (iv) the state, market, and civil society are all important stakeholders and players in the PRC's modernization process; furthermore, finding an effective division of labor and creating synergy among stakeholders will make PRC's modernization more successful and durable.

Keywords: People's Republic of China, modernization, modernization indicator, modernization framework

JEL Classification: O11, O53, P21

I. INTRODUCTION

A key challenge for any development strategy is how to define progress. Since the 1980s, the benchmarks defining development progress in the People’s Republic of China (PRC) have evolved as the economy developed. Historically, the PRC’s policy targets have focused on raising gross domestic product (GDP) per capita as a proxy for improved living standards. While the focus remains on raising GDP per capita, the PRC’s development goals have broadened in important dimensions. The 19th National Congress of the Communist Party of China in 2017 set the stage for advancing the country’s development goals by embedding them in the governing philosophy with Chinese characteristics. The new goal, coupled with the pursuit of well-being, seeks to move to a higher objective than a “moderately prosperous society,” which has already been achieved, and with extreme poverty now largely eradicated. The new goal also seeks to make progress on achieving a “harmonious society.”

The basic goals of the modernization process are expected to be achieved by 2035, by which time the PRC is expected to be a leading innovator with a strong rule of law and a large middle-income population. But no national indicators are in place to gauge the level of and progress on the country’s modernization. Thinking on development goals, however, is evolving amid an international debate on modernization. This has already spawned pilots in the PRC to broaden the definitions of modernization beyond GDP per capita¹ through various measures, including access to quality education, health care services, social safety nets, a clean environment, safe food, and good jobs.²

For quality education, the Central Committee of the Communist Party of China and the State Council of the People’s Republic of China issued a blueprint in February 2019 for developing education. The Education Modernization 2035 Plan aims to strengthen the sector’s capacity and international influence. It sets the objectives of establishing a modern education system of lifelong learning, with universal and high-quality preschool education, balanced compulsory education, enhanced vocational education, and more competitive higher education.

The 2021–2025 period will be a critical time for the PRC as it strives to move beyond the goal of a moderately prosperous society to become a high-income economy and a modern society focused on developing the broader well-being of the population. From 2020, policy makers envisage the PRC entering a new stage of development in which modernization is at the heart of policy making. Economic growth is an important contributor to modernization,

¹ While there are many possible definitions of modernization, a modernization approach can be described as enabling people to have the capabilities they need to live lives of purpose, balance, and meaning.

² For example, Guangdong province specified “Happy Guangdong” as one of its targets under the 12th Five-Year Plan, and it publishes an annual index of happiness for 21 of its cities. The index combines subjective and objective measures of well-being.

but not an end in itself—and it is not an adequate measure of modernization. The government’s modernization strategy should stress more inclusive growth led by innovation and productivity gains rather than focusing on GDP growth targets; focus on the need for more equitable income distribution so that the benefits of economic development can be shared by all citizens; and tackle the economic concerns of many Chinese people, such as the rising inequality in educational opportunities, economic security and access to medical services.

The government needs to be able to monitor and develop strategies for modernization under the New Era strategy. The 19th National Congress of Communist Party of China set up a two-stage development plan from 2020 to 2050. The first stage (2020–2035) is based on the foundation created by a “moderately prosperous society” and focuses on modernization with Chinese characteristics. The objectives of this stage are for the PRC to become a global leader in innovation in a country where the rule of law is strong. This stage also envisages strengthening institutions in capabilities, capacities, and other areas, and ensuring equitable access to high-quality public services. The second stage (2036–2050) is the transition to a high-quality pattern of development and sustainable gains in well-being. Here, the governance system will be modernized, and the system’s capacity expanded. In the second stage, the PRC, by then a modern country, aims to become an influential global leader in innovation and other areas.

The modernization process has two main components: the transition to high-quality—rather than high-speed—development; and the pursuit of a more advanced concept of well-being that goes beyond the more narrowly defined income-based and material goals that have characterized five-year plans. To this end, the government wants to do the following: (i) analyze international experience in developing modern frameworks of national progress that are based on the broader concept of sustainable well-being; (ii) draw lessons from these frameworks that the PRC can use for future five-year plans; (iii) calibrate the PRC framework to set achievable goals for 2035 and 2050; and (iv) formulate strategies to achieve those goals.³

II. DEVELOPING MODERNIZATION INDICATORS: UNDERLYING FRAMEWORKS

A. Conceptual Framework

Modernization is a multifaceted concept since it encompasses developments in various dimensions—political, economic, social, cultural, and environmental, among others. The processes and outcomes of modernization are influenced by country-specific values and

³ The Asian Development Bank plans to provide support for (iii) and (iv) after completion of (i) and (ii).

historical contexts, and therefore differ among countries. At the core, however, modernization needs to be guided by widely accepted values, such as human rights and economic freedom, particularly if a country is trying to modernize in a globalized economic setting. Another important aspect of modernization is that it is essentially an evolutionary process, which can span over several decades, if not centuries. And this can be seen from the experience of today's developed economies. So, a critical issue for modernization is how to sustain the process for continued progress while minimizing possible imbalances or setbacks.

Given these aspects of modernization, the fundamental element of this process is to build a value system that applies to all stakeholders in the modernization process, helps a country to define the notion of well-being for individuals and society as a whole, and guides individual and collective decision-making for the betterment of the society. Although the value system should reflect the diverse values that society agrees on, the most important common denominator is, for practical purposes, governance.

Modernization will inevitably involve shifts or realignments of incentives, power, and responsibilities among stakeholders, which could be disorderly and even disruptive if not managed properly. A durable and rules-based solution to these challenges is to build good and effective governance on the basis of widely acceptable values at the core. Good and effective governance, which is institutionalized by laws, rules, and social contracts, is consistent with international norms, and operates at all level of resource allocation. Building good and effective governance is essentially what the process of modernization is all about.

This section examines the following supporting values for this:

- **Rule of law.** This is the core principle of good governance; it bolsters the ownership of stakeholders in the modernization process by clearly defining rights and responsibilities, and reducing uncertainty in decision-making.
- **Transparency.** This is a necessary condition of a merit-based governance system in which stakeholders are held accountable for their actions, and checks and balances are at work. Lack of transparency is an important cause of market failure, inefficiency, and corruption.
- **Liberalization.** This is directly related to economic freedom and equal opportunity, which are crucial for economic efficiency. Liberalization supports global economic integration, which is an important driver of modernization.
- **Social safety.** This refers to welfare and risk management at the society level and is important for ensuring the broadest participation of stakeholders in the modernization process.

These values are widely accepted by many countries seeking modernization regardless of their sociopolitical systems. They help incentivize innovation, promote social cohesion,

enable effective checks and balances, and strengthen the responsibility and accountability of stakeholders. Going by the vision of the state leadership on modernization, these values will also be adopted in the PRC's modernization process. But how to institutionalize these values in the modernization process will differ depending on a country's social characteristics and political contexts.

The evolutionary nature of the modernization process implies that it can be viewed as a process of capital accumulation. This is because growth and economic development are viewed as an outcome of capital accumulation where capital is broadly defined to include human capital. The conceptual framework proposed by Stiglitz, Sen, and Fitoussi (2009) to explain modernization based on four capital inputs can be extended to include governance capital as a fifth input. Here, a modernization production function denoted by $F(\cdot)$ can be characterized by

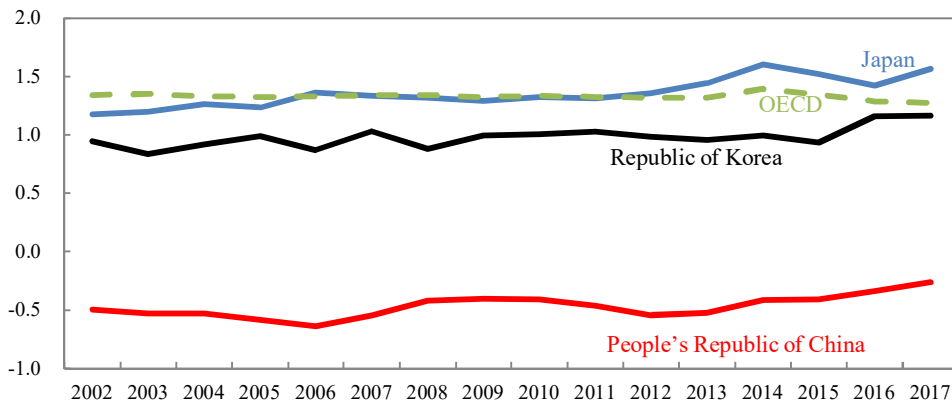
$$M = A(G) \cdot F(K_1(G), \dots, K_n(G)),$$

where M refers to modernization output and G to governance capital, and $K_j, j = 1, 2, \dots, n$ represents other forms of capital, such as physical, human, social and natural capital, as proposed by Stiglitz, Sen, and Fitoussi (2009) and Hepburn and Stern (2019).⁴ Governance capital affects total factor productivity (A) and the accumulation of all other forms of capital because it determines the quality of resource allocation at all levels. This production function framework signifies the role of governance as the fundamental input to the process of modernization and opens the possibility to measure and monitor progress in modernization indirectly by tracking capital accumulation, particularly when it is difficult or impossible to directly measure or quantify progress in modernization.

A few examples of indirect measures of modernization are worth considering in relation to governance. Figure 1 shows a rule of law index for the PRC, Japan, and the Republic of Korea in comparison with the average of Organisation for Economic Co-operation and Development (OECD) countries. Figure 2 does the same for a corruption perception index and Figure 3 for an economic freedom index. The PRC lags behind in all three indicators, suggesting that increasing governance capital could yield large and lasting benefits for advancing modernization.

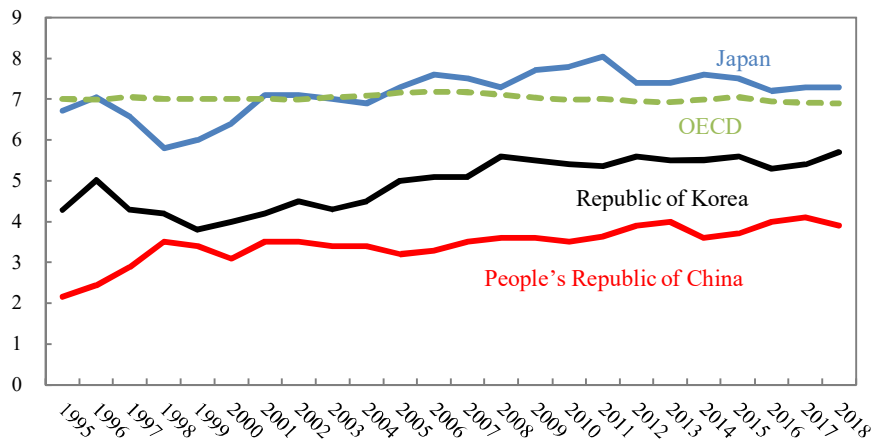
⁴ The production function is a succinct way to characterize the relationship between modernization and capital inputs. Modernization output encompasses both quantity and quality dimensions.

Figure 1: Rule of Law Index, 2002–2017



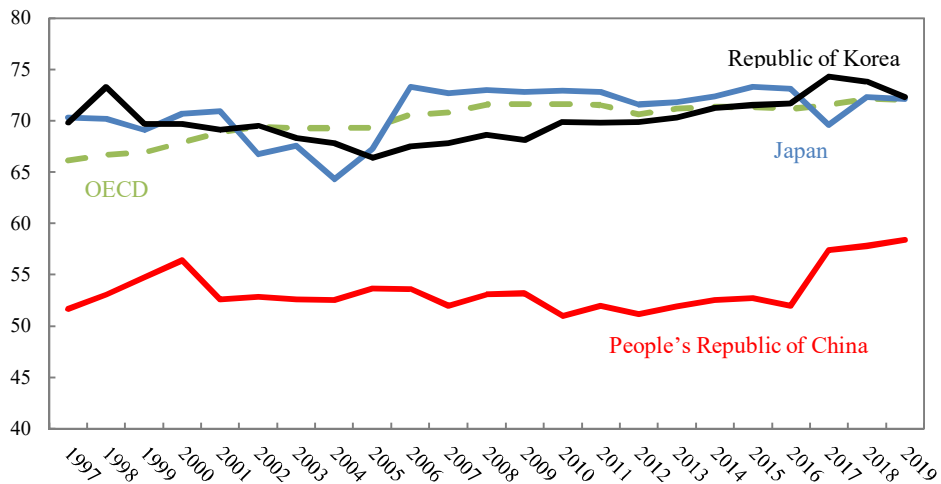
OECD = Organisation for Economic Co-operation and Development.
Source: Transparency International.

Figure 2: Corruption Perception Index, 1995–2018



OECD = Organisation for Economic Co-operation and Development.
Source: Transparency International.

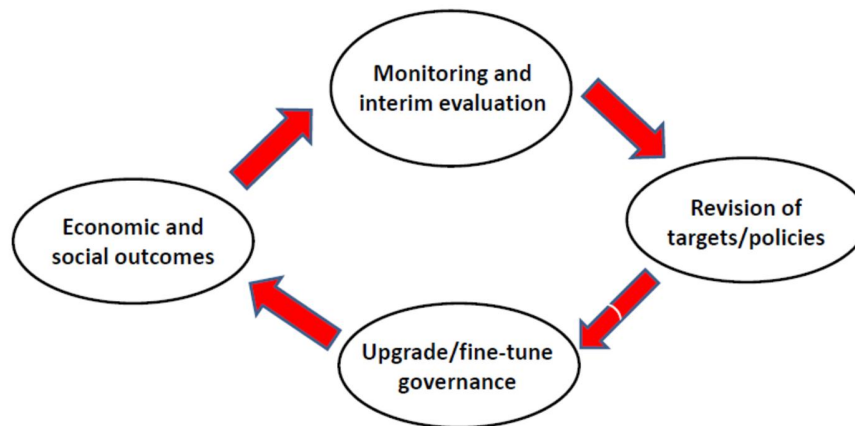
Figure 3: Economic Freedom Index, 1997–2019



OECD = Organisation for Economic Co-operation and Development.
Source: Heritage Foundation.

Governance-building is a process that needs to be managed constantly and effectively. As modernization progresses simultaneously on many fronts and new challenges arise, governance needs to be adapted to emerging situations and upgraded using best practices. For this, it is important to have a feedback loop of monitoring, revision, and upgrading (Figure 4). Because modernization reflects social development objectives and not just economic development goals, the state needs to play an important role in critical elements of the process—for example, improving income equality through redistribution, upgrading regulatory frameworks, and ensuring fair and effective law enforcement, all of which require significant administrative capacity and management effort. For example, the efficient and sustainable delivery of public welfare programs require careful policy design to ensure the right balance between incentives and needs, constant monitoring of program performance and resource availability, and periodic evaluation for improvements and learning. Administrative capacity for carrying out challenging tasks can be developed more quickly and effectively if public sector governance encourages merit-based human resource policy.

Figure 4: The Feedback Loop for Managing Governance Building



Source: Authors.

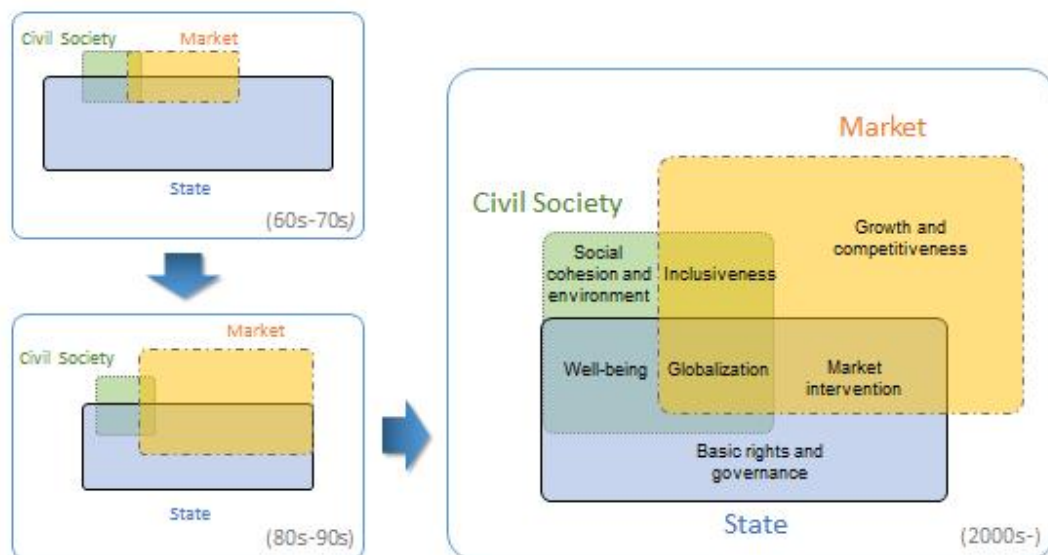
B. Operational Framework

Since governance matters for all stakeholders, modernization should be a participatory process for it to be sustained, owned by all stakeholders, and, ultimately, to be successful. In this respect, it is useful to think in terms of the three major stakeholders that participate in the modernization process—state, market, and civil society. Historical evidence suggests that the roles and contributions of each evolve over time and differ by stage of modernization. The state, for example, tends to be dominant in the early phase. Historical evidence also shows significant overlaps in the interests, roles, and contributions to the modernization process among the three stakeholders.

This section examines developing indicators to track the modernization progress for each of the three stakeholders primarily from the perspective of building governance but also for progress in their interactions. The modernization indicators for each of these stakeholders focus on their mandates and primary roles. For instance, those for the state will track the state’s role in protecting basic rights, upholding the rule of law, and strengthening the accountability of the state. Indicators for the market will track promoting economic growth and stability, and fair competition. Indicators for civil society will track its role in promoting social cohesion and inclusiveness (another focus for civil society will be effective checks and balances). For the intersection between the state and market, state intervention in the market will be a focus of modernization indicators. The intersection between the market and civil society will be monitored from the perspective of inclusiveness and social equity. The intersection between the state and civil society will focus on welfare policies and social safety nets. And monitoring the intersection among all stakeholders will focus on the progress on globalization and the outcomes of socioeconomic policies.

For illustrative purposes, Figure 5 characterizes the evolution of the modernization process in the Republic of Korea using a triage framework. At the early stage of economic development (1960s and 1970s), the state played a dominant role in resource allocation relative to the market and civil society (upper-left panel). The institutional backing needed for markets to function was almost nonexistent then (when even the concept of civil society was lacking in Korean society). In the 1980s and 1990s, the market emerged as an important apparatus for resource allocation, particularly as the economy became more complex, while the role of the state receded. In the late 1980s, civil society gained a voice in political democratization (bottom-left panel). In the 2000s, the market grew further in line with globalization and civil society gained political significance and broader participation (right panel). The structure and composition of modernization indicators evolved in line with these developments.

Figure 5: Stakeholders and Interactions in the Republic of Korea’s Modernization



Source: Authors.

III. MODERNIZATION INDICATORS FOR THE PRC

A. Structuring Modernization Indicators

To diagnose the challenges that the PRC faces in its modernization process, an upgraded version of the modernization indicators used by the National Research Council for Economics, Humanities and Social Sciences (NRCS) of the Republic of Korea and the Korea Development Institute are used (Park et al. 2010; Park et al. 2015). The NRCS uses the economic and social development indicator to support evidence-based policy-making, which is becoming increasingly popular as a policy tool globally. This indicator is also academically meaningful because of its great contribution to developing alternative indicators to GDP that are now used by several governments and international organizations.

The recent history of developing countries shows the modernization process has been a complex one determined by the initial conditions of each country as it embarked on its modernization journey. Recent governance research is showing the importance of the three constituent elements of governance (state, market, and civil society) (Park et al. 2015). Because the state is composed of legal, administrative, and political entities, it should protect basic rights, such as freedom, property rights, political participation, and people's safety. The state should also be accountable to citizens by taking measures to combat corruption, uphold the rule of law, and enhance the effectiveness of government. The market represents the capacity of the economy; this includes creating new markets and industrial competitiveness. Creating new markets is necessary to make a virtuous cycle of growth and stability without sacrificing one for the other. Industrial competitiveness can be interpreted as a combination of informatization, innovation, and capital formation. Civil society has two dimensions in this theoretical framework. The first has social cohesion as its foundation. The second is the environment. Both the Sustainable Development Goals and President Xi Jinping's speech at the 19th National Congress emphasized that care of the environment is an important element of the modernization process.

State, market, and civil society have their own principles. Since the state has coercive force, it is usually run by command and hierarchy. Since the market increases the efficiency of resource allocation through competition, it operates on the basis of competition and efficiency. And since civil society is run by social contracts among citizens, tolerance and confidence are seen as the most important principles.

As long as the state, market, and civil society each operate following their own principles, there should, on the face of it, be no room for conflict. But in reality, since the three elements of a modernization indicator overlap each other, conflicts arise in the intersections where two different principles collide. The area where the state intervenes in the market is called market intervention. The intersection of the state and the market consists of two areas. The first is where the administration exercises its influence over the market. The capacity of an administration to do this can be measured in terms of the quality of its officials. The second

area is where the state's behavior can be assessed by whether it conforms to the market principle. This administrative performance can be assessed in terms of competition efficiency. As a result, market intervention consists of regulatory quality and promoting competition. Inclusiveness is where the market and civil society intersect each other. From civil society's perspective, equity matters more than economic efficiency. For civil society to be compatible with the market, economic *and* social equity should be taken into consideration. Thus, inclusiveness consists of economic and social equity. Well-being is where the state and civil society overlap. Because of this, well-being in a modern economy is founded on the collective view of what governments should do to protect their citizens from various risks. Well-being can be measured by health and education. Globalization is at the intersection of the three categories of state, market, and civil society; this is because globalization is a common goal of these three categories of the governance.

The structure of a modernization indicator basically comprises the three categories of state, market, and civil society. The modernization process of developed economies showed that the state was the most influential of the three before they reached the maturity of an industrial society. At the early stage of modernization, the market and civil society are not mature enough to operate independently. On becoming industrialized, the market develops and civil society is awakened. As a result, the state cedes part of its power to the market. Rapid industrialization enables a mature civil society to emerge from this.

The three categories of a modernization indicator are not separate but overlap each other. The structure of the modernization indicator consists of the three categories, where each of the three categories has two subcategories, and each subcategory has three elements (Appendix 1, Table A1.1). The three categories also have four intersections—market intervention, well-being, inclusiveness, and globalization. Each of these intersections has its own subcategories and subcategory elements (Appendix 1, Table A1.2). Modernization indicators and their sources are provided in Table A1.3 in Appendix 1.

B. Modernization Indicators and Capital

Modernization can be interpreted as a process of capital formation that includes physical, human, social, natural, and political capital. Capital accumulation in the industrialization process of Western countries started with physical capital, followed by human, political, social, and natural capital. Every industrialized country achieved capital deepening and diversification in their modernization processes. Capital deepening is often measured by capital formation in machine equipment and nonresidential buildings; capital diversification can be measured by capital movement from physical to human, social, political, and natural capital.

The major components of a modernization indicator correspond to various kinds of capital. Note that as well as the four forms of capital, governance capital was added to this theoretical framework. Governance capital affects total factor productivity and the accumulation of all

other forms of capital because it affects the quality of resource allocation at the state level. Therefore, the two subcategories of state (basic rights and accountability) and the two subcategories of market intervention (quality of administration and competition) correspond to governance capital.

Physical capital played a central role in past modernization processes and is still important because it underpins the functioning of modern societies. Stable growth and industrial competitiveness, two subcategories of market and economic openness, and a subcategory of globalization, can be interpreted as part of physical capital. To create a highly skilled, healthy, and flexible workforce, investment in human capital is absolutely essential. The PRC has long invested in the human capital of its people through health and education (Hepburn and Stern 2019).

Social capital is important because it is the foundation of a cohesive society and promotes good governance, which helps tackle inequality (Hepburn and Stern 2019). Therefore, social cohesion, a subcategory of civil society, and economic equity and social equity, two subcategories of inclusiveness, can be classified as social capital. The environment, a subcategory of civil society, can be viewed as a part of natural capital.

All the 14 subcategories of the modernization indicator match the five types of capital. Governance capital includes four subcategories; physical, human, and social capital cover three subcategories; and natural capital covers only one subcategory (Appendix 2, Table A2.1).

C. Analysis Results: PRC Trends versus Global Trends

This section looks at the trends in the major categories of the PRC's modernization indicator from 1995 to 2018. The fastest growth rate was found in the market category with an average annual growth rate of 2.15% over this period. State and civil society grew by 0.07% and 0.31%, respectively. By subcategory, industrial competitiveness grew fastest on average annual growth of 4.43%; social equity had the lowest rate, at -0.04% (Table 1).

Table 1: Modernization Indicators Growth Rate in the People’s Republic of China

Category/Subcategory	1995	2005	2018	1995–2018 Growth Rate ^a
State	0.24	0.27	0.34	1.51
Basic rights	0.36	0.36	0.40	0.42
Accountability	0.13	0.18	0.29	3.62
Market	0.26	0.33	0.43	2.15
Stable growth	0.39	0.47	0.47	0.90
Industrial competitiveness	0.14	0.29	0.39	4.43
Civil Society	0.45	0.46	0.48	0.31
Social cohesion	0.34	0.34	0.33	(0.12)
Environment	0.56	0.59	0.58	0.55
Market Intervention	0.54	0.56	0.59	0.35
Quality of administration	0.62	0.63	0.63	0.11
Competition	0.47	0.50	0.54	0.66
Well-Being	0.42	0.51	0.59	1.52
Health	0.59	0.64	0.70	0.75
Education	0.25	0.38	0.49	2.97
Inclusiveness	0.69	0.68	0.70	(0.01)
Economic equity	0.73	0.71	0.73	(0.01)
Social equity	0.66	0.66	0.67	(0.04)
Globalization	0.28	0.32	0.35	0.99
Economic openness	0.33	0.37	0.40	0.88
Global citizenship	0.23	0.27	0.30	1.15

() = negative.

^a The growth rate is the average annual growth rate of normalized values not of the original value. The growth rate calculated in this way shows the relative performance of countries, instead of the growth of an individual country. The category growth rate is calculated as the average of the growth rate of the subcategories.

Source: Authors’ calculation.

We also analyzed the growth rate and convergence based on the normalized value of data for each category and subcategory for OECD and G20 countries. The comparative analysis of global trends by category examined the competitive performances of OECD and G20 countries from 1995 to 2018. OECD and G20 countries are classified into a high-performance group (H) of the most competitive economies (the top 30%); a middle-performance group (M) (70%–30%), and a low-performance group (L) (below 30%).

Table 2 summarizes the comparative analysis of the PRC’s trends versus those in OECD and G20 countries. For the category of state, the average annual growth rate in OECD and G20 countries—which were also used for the analysis—during 1995–2018 was 0.07%. Even though the growth rate of the state category in the PRC, at 1.51%, was faster than in comparator countries, the PRC has not caught up with them because it lagged far behind in this category at the start of the review period. For market, the average growth rate in OECD and G20 countries during 1995–2018 was 2.15%, the highest among all categories and

intersections. The PRC did very well compared with the average of OECD and G20 countries. Over the review period, the PRC moved from the low-performance group to the middle group, with the highest average annual growth rate of 4.04%. The PRC's improvement in the market category is largely due to its strong performance in the subcategory of stable growth. Fast growth rates of income per capita, macroeconomic stability, and financial development in the PRC during the review period were far higher than the average for OECD G20 countries. In the industrial competitiveness subcategory, the PRC had the highest average annual growth rate, at 5.61%, and moved from the low-performance group to the middle one over the period.

For stable growth, the PRC moved from the low-performance group to the high-performance one over 1995–2018, with an average annual growth rate of 3.15%. For civil society, the level at the start of the review period in the PRC was at the value of 0.37 and it remained in the low-performance group. For market intervention, even though the PRC had the highest average annual growth rate (5%), it remained in the low-performance group, because its position at the start of the review period was well below that of the other four countries.

For well-being, the average annual growth rate in OECD and G20 countries during 1995–2018 was 1.52%. Well-being at the start of the review period in the PRC was far lower than the other countries (similar to state and market intervention), which prevented it from catching up despite a high rate of growth in this subcategory. For inclusiveness, the average annual growth rate in OECD and G20 countries during 1995–2018 was 0.01%, the lowest among all the categories of the modernization indicator. This implies that social and economic equities in these countries barely improved over the review period. The PRC recorded its worst score in this category, with a contraction of –0.83%. But it is worth noting that the PRC surpassed the average annual growth of OECD and G20 countries in all categories but inclusiveness. The sharp decline in inclusiveness in the PRC's rankings was caused by deteriorating economic equity. For globalization, as was the case for state, market intervention, and well-being, the PRC's ranking at the start of the review period was far below the other countries. And, again, even though the PRC achieved fast growth in well-being, at 3.12%, it was not able to reach the average of the other countries.

The PRC has made big gains in many modernization indicator areas since 1995. But it was unable to move out of the low-performance group and inclusiveness even deteriorated, moving from a middle-performance group to a low-performance one because of the conditions prevailing at the start of the period in certain categories/subcategories, which were far lower than OECD and other G20 countries.

Table 2: Modernization Indicator Performance for the People’s Republic of China, Organisation for Economic Co-operation and Development, and G20 Countries, 1995–2018

Category/Subcategory	AAGR 1995–2018 (%)		PRC’s relative position		
	PRC	OECD + G20	1995	2018	Change
State	1.51	0.07	L	L	→
Foundation: basic rights	0.42	0.12	L	L	→
Politics	1.56	(0.07)	L	L	→
Freedom	(1.07)	(0.29)	L	L	→
Safety	0.42	0.70	M	M	→
Accountability	3.62	(0.01)	L	L	→
Corruption	5.93	0.11	L	L	→
Rule of law	1.56	(0.07)	L	L	→
Government effectiveness	4.43	(0.04)	L	L	→
Market	4.04	2.15	L	M	↑
Foundation: stable growth	3.15	0.90	L	H	↑
Income	13.51	1.77	L	L	→
Macroeconomic stability	1.22	0.49	L	M	↑
Financial development	6.73	1.29	M	H	↑
Industrial competitiveness	5.61	4.43	L	M	↑
Informatization	33.23	15.41	L	L	→
Innovation	6.93	1.56	L	M	↑
Capital formation	1.94	0.63	M	H	↑
Civil Society	0.49	0.31	L	L	→
Foundation: social cohesion	0.40	(0.12)	H	M	→
Population	(2.85)	(2.94)	H	H	→
Social capital	1.05	0.13	H	H	→
Tolerance	(3.86)	0.15	L	L	→
Environment	1.25	0.55	L	L	→
Resource efficiency	3.32	0.75	L	L	→
Environmental hazard	1.71	0.30	L	L	→
Regenerative capability	(3.69)	0.85	H	M	↓
Market Intervention	1.26	0.35	L	L	→
Quality of administration	0.53	0.11	L	L	→
Regulatory quality	0.53	0.11	L	L	→
Competition	1.85	0.66	L	L	→
Promotion of competition	1.85	0.66	L	L	→
Well-Being	2.92	1.52	L	L	→
Health	1.03	0.75	L	L	→

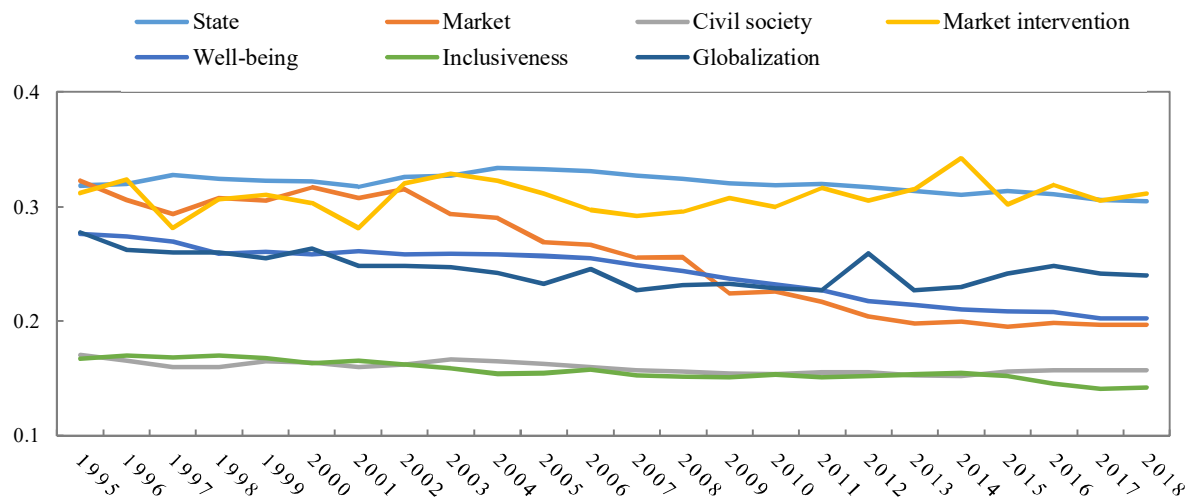
		Life expectancy	1.03	0.75	L	L	→
	Education		22.42	2.97	L	L	→
		Enrollment rate	22.42	2.97	L	L	→
Inclusiveness			(0.83)	0.01	M	L	↓
	Economic equity		(1.86)	(0.01)	M	L	↓
		Income distribution	(1.86)	(0.01)	M	L	↓
	Social equity		0.10	0.04	M	M	→
		Gender parity	0.34	0.51	M	M	→
		Generation	(0.10)	(0.34)	M	M	→
Globalization			3.12	0.99	L	L	→
	Economic openness		3.47	0.88	L	L	→
		Trade	0.70	2.15	L	L	→
		Trade freedom	5.80	0.89	L	L	→
		Foreign direct investment	(0.23)	(0.03)	H	M	↓
	Global citizenship		2.09	1.15	L	L	→
		Foreign population	10.87	1.87	L	L	→
		International treaties	2.13	0.85	L	L	→
		Refugees	(0.13)	1.55	L	L	→

() = negative, AAGR = average annual growth rate, OECD = Organisation for Economic Co-operation and Development, PRC = People's Republic of China, L = low-performance group, M = middle-performance group, and H = high-performance group.

Source: Authors' calculation.

Figure 6 shows that a decreasing trend in the coefficient of variation indicates convergence among the sample countries; an increasing trend shows a widening gap. The coefficient of variation for market shows a noticeably negative slope, meaning the gap between countries in this category has reduced the most. Gaps in state and civil society did not narrow as much. At the intersections, the average growth rate of each intersection was slightly negative, showing weak convergence among OECD and G20 countries.

Figure 6: Coefficient of Variation in the People’s Republic of China, 1995–2018



Source: Authors’ calculation.

D. The PRC’s Modernization Indicator Performance versus the Republic of Korea and Japan

Because the Republic of Korea’s income per capita in 1995 was very similar to the PRC’s in 2017, comparing the performances of the modernization indicators of both countries is a useful exercise. To get a better picture of the relative performance of the PRC, Japan was included as a comparator country. The modernization indicators show there are similarities and differences in the performances of the three countries. For the market category, the PRC moved to the high-performance group, as did the Republic of Korea, but Japan went from high-performance to medium-performance. In the state category, the PRC remained in the low-performance group and Japan in the middle-performance group, while the Republic of Korea improved its position from low performance to middle performance. All three countries remained in their initial positions in the civil society category. There were almost no changes for the areas of intersection, except for well-being in the Republic of Korea moving from middle performance to high performance, and inclusiveness in the PRC moving from middle to low.

A first approximation shows that the state (low-performance group), market (middle-performance group), and civil society (low-performance group) categories all belonged to the same performance group in the PRC in 2018 and the Republic of Korea in 1995. Since 1995 the Republic of Korea improved its initial position in state and market, while its position stayed the same in the civil society over that entire period (Table 3). Since the PRC is expected to maintain higher economic growth than the other two countries over the next decade, it will almost certainly improve its position in the market category over this period.

Table 3: Modernization Indicator Performance All Categories and Subcategories for the People’s Republic of China, Republic of Korea, and Japan, 1995 and 2018

Category/Subcategory	PRC			Korea, Rep of.			Japan		
	1995	2018	change	1995	2018	change	1995	2018	change
State	L	L	→	L	M	↑	M	M	→
Basic rights	L	L	→	M	M	→	M	M	→
Accountability	M	M	→	L	M	↑	M	M	→
Market	L	M	↑	M	H	↑	H	H	→
Stable growth	L	H	↑	M	H	↑	H	M	↓
Industrial competitiveness	L	M	↑	H	H	→	H	H	→
Civil Society	L	L	→	L	L	→	M	M	→
Social cohesion	H	M	↓	L	L ^a	→	M	M	→
Environment	L	L	→	L	L	→	M	M	→
Market Intervention	L	L	→	M	M	→	M	M	→
Quality of administration	L	L	→	L	M	↑	M	M	→
Competition	L	L	→	M	L	↓	M	H	↑
Well-Being	L	L	→	M	H	↑	H	H	→
Health	L	L	→	M	M	→	H	H	→
Education	L	L	→	H	H	→	M	M	→
Inclusiveness	M	L	→	M	M	→	M	M	→
Economic equity	M	L	↓	H	M	↓	M	M	→
Social equity	M	M	→	L	L	→	M	H	↑
Globalization	L	L	→	L	L	→	L	L	→
Economic openness	L	L	→	L	L	→	M	L	→
Global citizenship	L	L	→	L	L	→	L	L	→

L = low-performance group, M = middle-performance group, H = high-performance group.

^a The low level of social cohesion in the Republic of Korea is notorious. According to the Better Life Index of the Organisation for Economic Co-operation and Development (OECD), the country performed well on the material side, but was very weak on the nonmaterial side. Community life, which is most associated with social cohesion, was the lowest of all OECD countries.

Source: Authors’ calculation.

A global trend analysis of modernization indicators showed the development paths of advanced economies were very diverse during 1995–2018. Table 4 shows the results for Nordic countries (average level), the United States, Japan, and Germany during the period. For comparison purposes, the performances of the PRC and the Republic of Korea are included.

Table 4: Modernization Indicator Performances in Nordic Countries, United States, Japan, and Germany, 1995 and 2018

Country	Market		State		Civil Society		Market Intervention		Well-Being		Inclusiveness		Globalization	
	1995	2018	1995	2018	1995	2018	1995	2018	1995	2018	1995	2018	1995	2018
Nordic	H	H	H	H	H	H	H	H	M	M	H	H	H	H
Japan	H	M	M	M	M	M	M	M	M	M	M	M	M	L
US	H	H	M	M	L	L	M	M	H	H	M	L	M	M
Germany	H	M	M	H	M	H	H	H	M	M	H	H	H	H
ROK	M	H	L	M	L	L	M	L	M	H	M	M	L	L
PRC	L	M	L	L	L	L	L	L	L	L	M	L	L	L

ROK = Republic of Korea, PRC = People's Republic of China, US = United States, L = low-performance group, M = middle-performance group, H = high-performance group.

Note: Nordic countries for the purpose of this analysis are Denmark, Norway, and Sweden.

Source: Authors' calculation.

Nordic countries were found high-performing based on the modernization indicators used. All indicators except for the well-being category is high-performing throughout the period. It is surprising, however, that the well-being indicator is just middle-performing as they are often seen as welfare states. This is because well-being in the modernization indicator is assessed only by education and life expectancy, whereas these countries are known for welfare areas, such as housing, health, and pensions. Germany was in both the high- and middle-performance group, showing a balanced performance in its modernization process. The United States and Japan were in the low-performance group for globalization, showing uneven performances in their modernization processes.

Table 4 also shows that the modernization process does not proceed in a uniform way; each country has its own strengths and challenges. That said, once a country reaches a certain stage of modernization, it is difficult to move upward without a big effort. Germany, Japan, Nordic countries, and the United States all reached income per capita of over \$30,000 in 1990. Since the 2000, however, there has been no change in the rankings of Nordic countries, and Japan has experienced declines in market and globalization. The United States dropped in its ranking for inclusiveness. Germany fell back into the middle-performance group for market.

E. The PRC's Modernization Process: Assessment and Future Scenarios

The following observations for assessing the modernization process in the PRC using the modernization indicators can be made:

- The PRC got the best score for the market category and the worst for inclusiveness, leading a global trend for a weak performance on inclusiveness. The growth rate of market in developing countries, including the PRC and India, has been faster than in developed economies, showing these high-growth developing countries are on the path toward converging with OECD and G20 countries.
- The PRC excelled in the market category, and turned in relatively good performances in state, civil society, market intervention, well-being, and globalization in terms of the rate of growth. But the PRC was not able to improve its performance in these areas compared with other countries because the initial conditions lagged far behind these countries at the start of the review period. Most of the PRC's modernization indicator variables outperformed the average of OECD and G20 countries except for freedom, safety, tolerance, regenerative energy, economic equity, foreign direct investment, and refugees.
- Both the PRC and the Republic of Korea performed quite well in accountability, stable growth, and education; however, they underperformed in economic equity. Because the economic situation in the PRC in 2018 was similar to the Republic of Korea's in 1995, the PRC is expected to continue progressing in these areas. In this sense, the biggest challenge the PRC seems to face is improving economic equity.
- To be able to better understand and diagnose current situations in the PRC, detailed and comparable data, in particular social data, are needed. President Xi Jinping, in his speech to the 19th National Congress, underscored that well-being is the fundamental goal of development. President Xi noted that childcare, education, employment, medical care, elderly care, housing, social assistance, and poverty alleviation are all elements of well-being (Xi 2017). To measure different dimensions of well-being, detailed data on the PRC as well as for OECD countries are needed. Unfortunately, only detailed data on health and education were available for OECD countries, which is why only health and education variables were included for well-being in this study.

To make projections for the PRC's modernization indicators, the past trend was estimated using two different methods with two different periods. For the first method, the past trend was calculated using the whole review period (1995–2018) and for a period that President Xi has been in power (2013–2018). The trends in the two periods were separated to see if there were significant changes since President Xi has been in power. For the second method, the past trend was calculated using both the original values and normalized values. Estimation results of the past trend are summarized in the following three observations:

First, the growth rates of state and well-being in the two periods did not surpass each other. As Table 5 shows, when the growth rate is calculated by normalized value, the growth rate of the state category in the whole period is 1.51%, but 2.79% for 2013–2018. When the growth rate is calculated by original value, the rate for state in the whole period is 0.94%, but 0.93% for 2013–2018. Because the growth rate of the state varies depending on the method of

estimation, the performances of the two periods are not comparable. Second, the performances of market and globalization for the whole period is better than for 2013–2018 in terms of average annual growth rates for both normalized and original values. Third, the average annual growth rates for civil society, market intervention, and inclusiveness during 2013–2018 are higher than those for the whole period for both normalized and original values.

Table 5: Average Annual Growth Rates in the People’s Republic of China and the Organisation for Economic Co-operation and Development, 1995–2018 versus 2013–2018

Category/Subcategory	Normalized AAGR				Original AAGR			
	1995–2018 AAGR		2013–2018 AAGR		1995–2018 AAGR		2013–2018 AAGR	
	PRC	OECD + G20	PRC	OECD + G20	PRC	OECD + G20	RRC	OECD + G20
State	1.51	0.07	2.79	0.04	0.94	0.82	0.93	0.72
Basic rights	0.42	0.12	1.96	0.17	0.55	1.55	0.71	1.42
Accountability	3.62	(0.01)	17.79	(0.12)	1.32	0.08	1.16	0.01
Market	4.04	2.15	2.47	0.59	11.59	4.68	5.89	1.48
Stable growth	3.15	0.90	15.34	0.25	3.15	0.33	6.78	0.97
Industrial competitiveness	5.61	4.43	28.53	1.02	20.02	9.02	5.00	1.99
Civil Society	0.49	0.31	1.35	0.15	(0.57)	0.52	0.84	0.24
Social cohesion	(0.40)	(0.12)	(1.84)	(0.16)	(1.09)	(0.46)	(0.68)	(0.48)
Environment	1.25	0.55	5.86	0.32	(0.05)	1.49	2.36	0.96
Market Intervention	1.26	0.35	6.76	0.34	0.61	0.25	3.20	0.26
Quality of administration	0.53	0.11	2.48	0.20	0.16	0.04	0.86	0.10
Competition	1.85	0.66	8.81	0.51	1.06	0.45	5.54	0.42
Well-Being	2.92	1.52	3.48	0.63	5.76	1.79	5.14	0.69
Health	1.03	0.75	4.84	0.27	0.36	0.29	0.13	0.12
Education	22.42	2.97	153.59	1.16	11.16	3.29	10.15	1.27
Inclusiveness	(0.83)	0.01	0.59	0.11	(0.87)	(0.10)	0.42	0.06
Economic equity	(1.86)	(0.01)	(8.28)	0.18	(1.70)	(0.07)	0.79	0.15
Social equity	0.10	0.04	0.48	0.03	(0.05)	(0.14)	0.04	(0.03)
Globalization	3.12	0.99	(0.18)	0.65	0.81	1.80	(2.68)	3.57
Economic openness	3.47	0.88	17.00	0.12	0.29	1.79	(6.12)	1.88
Global citizenship	2.09	1.15	10.00	1.39	1.33	1.82	0.76	5.26

() = negative, AAGR = average annual growth rate, OECD = Organisation for Economic Co-operation and Development, PRC = People's Republic of China.

Source: Authors' calculation.

With the help of scenarios, the rest of this section examines whether the modernization goals for 2025 and 2035 can be achieved if the pace of past trends continue. Since there is too much uncertainty in using past trends to make projections to 2050, the scenario for 2050 is excluded in this exercise.

The two periods—1995–2018 and 2013–2018—are also used here to calculate a scenario for 2025 and 2035 on the basis of the past trend for 1995–2018 and 2013–2018 for a scenario for the same two periods. Two methods were used for these projections, using the average annual growth rate of the normalized values and the original values of each observed indicator.⁵

In the first of two findings from the projections, it is highly probable that the PRC will improve its relative standing in 2025 and 2035 for market, civil society, well-being, and globalization. The market category in particular is expected to enter into the high-performance group. This played a leading role in the Republic of Korea reaching income per capita of \$20,000 in 2006 and Japan \$30,000 in 1992. The Republic of Korea also succeeded in ameliorating well-being after it reached income per capita of \$10,000 in 1994.

The second projection is that it is highly probable the PRC will remain in the low-performance group for state, market intervention, and inclusiveness in 2025 and 2035 on the basis of all the scenarios and calculation methods. The Republic of Korea improved its performance ranking for the state category during 1995–2018, but Japan did not. Like the PRC, market intervention and inclusiveness in the Republic of Korea and Japan showed only a minor improvement over the review period.

The PRC's modernization process for market and well-being will likely follow a similar path to the Republic of Korea and Japan. When incomes per capita reached \$10,000, fast economic growth was accompanied by improving well-being. And like these countries, the PRC is not expected to improve the relative standing of state, market intervention, and inclusiveness unless it makes a greater effort to improve in these areas. Table 6 summarizes the scenarios.

⁵ For using normalized values, all the time series variables of the OECD and G20 countries are converted to values between 0 and 1 following the least square estimate method. Growth rates are calculated on the basis of these normalized values. Therefore, this method might be more appropriate to compare relative performances among the OECD and G20 countries.

Table 6: Summary of the Four Modernization Scenarios for 2025 and 2035

Category/Subcategory	2018	Normalized Values				Original Data			
		1995–2018 AAGR		2013–2018 AAGR		1995–2018 AAGR		2013–2018 AAGR	
		PRC	2025	2035	2025	2035	2025	2035	2025
State	L	L	L	L	L	L	L	L	L
Basic rights	L	L	L	L	L	L	L	L	L
Accountability	L	L	M	L	M	L	M	L	M
Market	M	H	H	H	H	H	H	H	H
Stable growth	H	H	H	H	H	H	H	H	H
Industrial competitiveness	M	H	H	H	H	H	H	H	H
Civil Society	L	L	L	M	M	L	M	M	M
Social cohesion	M	M	M	M	M	M	M	M	M
Environment	L	L	L	L	L	L	L	L	L
Market Intervention	L	L	L	L	H	L	L	L	L
Quality of administration	L	L	L	L	L	L	L	L	L
Competition	L	L	L	L	M	L	L	L	M
Well-Being	L	L	M	M	H	L	H	L	M
Health	L	L	L	L	L	L	L	L	L
Education	L	H	H	H	H	H	H	M	H
Inclusiveness	L	L	L	L	L	L	L	L	M
Economic equity	L	L	L	L	L	L	L	L	L
Social equity	M	M	M	M	M	M	M	H	H
Globalization	L	L	L	L	L	L	M	M	H
Economic openness	L	M	H	M	H	H	H	M	M
Global citizenship	L	L	L	L	L	L	L	L	L

AAGR = average annual growth rate, PRC = People's Republic of China, L = low-performance group, M = middle-performance group, H = high-performance group.

Source: Authors' calculation.

The following section briefly examines the experiences of the Republic of Korea and Japan in their modernization processes. These hold useful lessons for the government's efforts to advance modernization both for the 14th Five-Year Plan and beyond.

IV. THE REPUBLIC OF KOREA'S MODERNIZATION EXPERIENCE

The Republic of Korea started to expand the scope of its development strategies in the 1980s to pursue social objectives after 2 decades of successful economic development. These objectives included social welfare and more equitable income distribution—similar to what the PRC is aiming for today to achieve a better quality of development and to facilitate the transition to productivity-led growth from input-driven growth. The Republic of Korea is a useful benchmark for the PRC because both countries share structural characteristics, one of them being the important role state leadership has played in their economic development.

Economic development in the Republic of Korea pays attention to the quantity *and* quality of growth. In this context, creating decent jobs by expanding higher education, technological advances, and more balanced growth across sectors and regions has received increased attention. Because the PRC's modernization will be a long journey—and one that needs to be periodically reviewed to make adjustments where needed—the Republic of Korea's modernization process could be instructive for developing modernization indicators. The following looks at several experiences in the Republic of Korea's modernization effort that are relevant to the PRC.

Social development planning. The paradigm shift in social development planning in the early 1980s was a first step toward the country's broad-based modernization and a departure from its narrow focus on industrialization and growth. Economic stabilization paid off in terms of growth, and continued attention to social objectives from the late 1980s set the stage for a breakthrough in social development in the form of a national pension and public health care.

Social insurance and safety nets. Universal pension and health insurance coverage was achieved within a remarkably short period, but it was also carefully paced so that it would be affordable for citizens and accommodate government's fiscal capacity. The social insurance system of today benefited from adapting the models of developed economies to the country's needs and constraints. Universalism and a high redistribution content have, however, made it difficult to tackle sustainability issues. This is particularly so for the national pension given the demographic headwinds the country faces. Making universal coverage the responsibility of the state was conducive to social cohesion and inclusiveness, but it made subsequent reforms and adjustments to the social insurance system politically more difficult. The lesson here is that these systems need to be carefully and conservatively designed, and public trust is essential for instituting and sustaining an effective system, especially in countries facing significant demographic challenges.

Tackling rural–urban income disparity. Before the Republic of Korea had a well-developed social welfare system, this was tackled by promoting productivity growth in agriculture. At the same time, the development initiatives of villages were encouraged and supported by a national campaign to modernize rural communities headed by the New

Village Movement. This proved highly successful for economic and social development, with rural–urban income disparity being eliminated in less than a decade. Anecdotal evidence suggests that social trust and capital developed through this highly decentralized program helped create a legacy of national solidarity. The internationally admired public campaign to collect donations of gold in response to the 1997 Asian financial crisis was initiated in the context of the New Village Movement (Kim and Kim, 2013).

Balancing growth objectives with environmental sustainability. The Republic of Korea has struggled on this indicator. Political support for a greener pattern of economic growth has been lacking. Green growth initiatives have tended to use a top-down approach with limited public consultation. Policy targets for environmental sustainability were too ambitious and imposed unilaterally without broad agreement, risking a significant increase in the cost of doing business.

VI. POLICY IMPLICATIONS AND CONCLUSIONS

The PRC's rapid industrialization has been accompanied by immense changes in the economic structure and composition of employment and production. Heavy and sustained social infrastructure investment has not only supported economic transformation and productivity gains but also improved the quality of life. Going by the experiences of the Republic of Korea and Japan, this is the right time to pursue broad-based modernization and leave behind the narrow focus on industrialization and economic growth. At the center of the modernization efforts of the Republic of Korea and Japan were strengthened social safety nets and social welfare policies.

If the PRC embarks on its modernization as planned, it will face the immediate challenge of starting out from a level of inclusiveness that was below Japan when it started its modernization process in the 1960s and the Republic of Korea in the 1980s. By then, both these countries had for the most part achieved inclusive growth. Through the New Village Movement, the Republic of Korea was able to start its modernization unburdened by concerns of income disparity and social cohesion being weakened by the modernization process. Income disparity in the PRC is rising across sectors and regions, as can be seen from the steep increase in its Gini coefficient from 0.29 in 1990 to 0.47 by 2011, when income per capita reached \$10,000.⁶ This may be related to the household registration system. Industrialization typically involves sustained labor migration from low to high productivity sectors and regions. But this pattern of migration, if left to the market, will likely attenuate income disparity by reducing labor supply in low productivity sectors and hence put pressure on wages to rise. Freer labor migration could help reduce income disparity, but it will also

⁶ The PRC's urbanization ratio in 2011 (51%) was lower than Japan's in 1966 (69%) and the Republic of Korea's in 1988 (70%), when their income per capita was \$10,000 dollars in purchasing power parity terms.

put the country in a difficult trade-off between social cohesion and social stability, at least in the short term (Lee et al. 2019).

Four broad policy implications can be drawn from the modernization challenges that the PRC faces and from the modernization experiences of OECD and G20 countries. First, the PRC should continue to pursue economic governance reforms, as the most critical dimension of modernization is inclusive and sustained growth. Both are equally important. Maintaining strong growth and employment opportunities supported primarily by productivity increases is necessary to continuously expand the stock of resources for inclusive growth and a sustained improvement in the quality of life. Inclusive growth, meanwhile, supports sustained growth by enhancing social cohesion and social stability. Any country trying to modernize should therefore be mindful of the perils of large or extreme imbalances that are left unaddressed for too long. Sustained economic growth is a must for achieving the standard of well-being and modernization goals set for 2025 and 2035 by the state leadership. To this end, the government should prioritize economic governance reform to ensure sustainable growth driven primarily by innovation and efficiency gains. For the modernization indicators, the PRC has performed best in the market category, largely thanks to its economic success over the past several decades. But past success is no guarantee of future success; in fact, many countries have often become victims of their own success over the course of their modernization. The essence of economic governance reform is to ensure economic freedom to work and compete; strengthen market discipline for fair competition at own risks; and protect equal opportunities and property rights, including intellectual property rights.

Second, public sector reform is essential to enhance the state's capacity to formulate and adapt modernization strategies in accordance with socioeconomic developments, manage risks, and ensure resilience to policy errors. As discussed earlier, public sector reform should be guided by widely accepted values, such as transparency, accountability, efficiency, protecting basic human rights, and providing high quality public services. Because of the PRC's unique political economy, public sector reform will be the most fundamental determining factor of a successful modernization. More national resources have been allocated by the public sector in the PRC than in developed economies. This trend notwithstanding, the economic and financial globalization to be pursued will become even more pronounced as modernization proceeds. A strong but efficient and transparent public sector must be in place to lead and sustain modernization as envisioned by the state leadership.

Third, governance building is at the heart of modernization, which is a long, multidimensional, and evolutionary process that involves shifts in interests, power, and privilege. Modernization is also a process of capital accumulation at various dimensions. This implies that efficient and equitable resource allocation at all levels is key to successful modernization. Good and effective governance, preferably harmonized with a country's socio-political characteristics, should be at work to help achieve the complex task of modernization.

Fourth, the public and civil society are important stakeholders in the modernization process. Without their awareness, ownership, and participation, modernization could not be sustained; in fact, it would be irrelevant. The public should be constantly informed of the purpose of modernization, the need for reforms, and the risks involved. In short, the public and the state together should own the blueprint for the future, as they have been doing over the past several decades for economic development. In this sense, preparing and sharing the modernization plan and related development agendas is a collective learning and capacity-building experience for all stakeholders in the process. Without a clear vision for the future, political discussions will be mostly centered on the past and domestic issues, instead of future issues. In this context, developing, monitoring, and revising modernization indicators can be a highly effective communication channel among stakeholders and actors in the modernization process to promote public awareness and participation. The state, market, and civil society are all important stakeholders and players in the modernization process. The role of the market and state is essential in improving economic well-being. Civil society can play a primary role in improving social well-being by promoting public awareness on important social issues that have a bearing on the life of all citizens. Finding an effective division of labor among these three actors, and creating synergies among them, is what makes modernization successful and durable.

The experiences of OECD countries evaluated on the basis of various modernization indicators suggest this process does not necessarily proceed evenly across all dimensions. Some countries are more advanced in certain indicators than others, and some have achieved more progress in modernization than others. This diversity of experience probably reflects various social preferences, heterogeneous country characteristics, and different policies pursued over the course of modernization. For the PRC, it is therefore important to recognize from the outset that modernization, while guided by widely accepted values such as human rights, economic freedom, and good governance, is inherently a country-specific process.

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APPENDIX: DATA USED IN THE RESEARCH

TABLE A1: THREE CATEGORIES OF A MODERNIZATION INDICATOR

Category	Subcategory	Contents	Details
State	Foundation: basic rights	Politics	Political stability
		Freedom	Human Freedom Index
		Safety	Natural disaster risks, road fatalities
	Accountability	Corruption	Corruption Perceptions Index
		Rule of law	Rule of Law Index
		Government effectiveness	Government Effectiveness Index
Market	Foundation: stable growth	Income	GDP per capita
		Macroeconomic stability	Inflation
			General government debt
		Financial development	Financial size
	Financial activity		
	Industrial competitiveness	Informatization	Internet users
			Mobile cellular subscriptions
		Innovation	R&D expenditure
			Patent grants
		Capital formation	Human capital: labor quality
Physical capital: gross fixed capital formation			
Civil society	Foundation: social cohesion	Population	Fertility/aging
		Social capital	Trust
		Tolerance	Tolerance
	Environment	Resource efficiency	Energy intensity
		Environmental hazards	Carbon emissions
			PM2.5 air pollution
		Regenerative capability	Renewable energy

GDP = gross domestic product, PM = particulate matter, R&D = research and development.
 a Millennium Challenge Corporation, Government Effectiveness indicator. <https://www.mcc.gov/who-we-fund/indicator/government-effectiveness-indicator>.

Source: Authors.

TABLE A2: FOUR INTERSECTIONS OF THREE CATEGORIES OF A MODERNIZATION INDICATOR

Category	Subcategories	Contents
Market intervention (intersection between state and market)	Quality of administration	Regulatory quality
	Competition	Promotion of competition
Well-being (intersection between state and civil society)	Health	Life expectancy
	Education	Years of schooling
Inclusiveness (intersection between market and civil society)	Economic equity	Income distribution
	Social equity	Gender
		Generation
Globalization (intersection among state, market and civil society)	Economic openness	Trade
		Trade freedom
		Foreign direct investment
	Global citizenship	Foreign population
		International treaties
		Refugees

Source: Authors.

TABLE A3: MODERNIZATION INDICATOR DATA

Three Categories		
Contents	Indicators	Source
Politics	Political Stability and Absence of Violence/Terrorism Index (-2.5 to 2.5)	World Bank, Worldwide Governance Indicators
Freedom	Freedom of the press (0-100)	Freedom House
Safety	World Risk Index	UN University Institute for Environment and Human Security, Development Helps Alliance
	Road fatalities (per million inhabitants)	OECD.Stat, WHO
Corruption	Corruption Perceptions Index (0-10)	Transparency International
Rule of law	Rule of Law Index (-2.5 to 2.5)	World Bank, Worldwide Governance Indicators
Government effectiveness	Government Effectiveness Index (-2.5 to 2.5)	World Bank, Worldwide Governance Indicators
Income	GDP per capita, PPP (constant 2011 international dollars)	World Bank, WDI
Macroeconomic stability	GDP deflator (annual %)	World Bank, WDI
	General government debt (% of GDP)	IMD, World Competitiveness Center
Financial development	Private credit by deposit banks and other financial institutions plus equity market capitalization/GDP	World Bank, Financial Development and Structure Dataset
	Private credit by deposit banks and other financial institutions/GDP * stock market total value traded/GDP	World Bank, Financial Development and Structure Dataset
Informatization	Individuals using the Internet (% of population)	World Bank WDI
	Mobile cellular subscriptions (per 100 people)	World Bank WDI
Innovation	Research and development expenditure (% of GDP)	UNESCO Institute for Statistics
	Number of patent grants at the USPTO	OECD.Stat
Capital	GDP per person employed, PPP (constant 2011 international dollars)	World Bank WDI
	Gross fixed capital formation (% of GDP)	World Bank WDI
Population	Fertility rate (births per woman)/population ages 65 and above (% of total)	World Bank WDI
Social capital	Confidence for other people (most people can be trusted, %)	World Value Survey
	Confidence: police, courts, government, parliament, civil service (%)	World Value Survey
Tolerance	Tolerance	World Value Survey
Resource efficiency	Total primary energy consumption/GDP (1,000 Btu/GPD per capita, PPP (2010 international dollars)	US Energy Information Administration
Environmental hazard	CO2 emissions per GDP (million metric tons of CO2/GPD per capita, PPP 2010 international dollars)	US Energy Information Administration
	PM2.5 air pollution, mean annual exposure (micrograms per cubic meter)	World Bank, WDI; Sustainable Development Goals Collaborators (2017) ^a

Regenerative capability	Renewable energy consumption (% of total final energy consumption)	World Bank, WDI
Four Intersections		
Contents	Indicators	Source
Regulatory quality	Regulatory Quality Index (-2.5 to 2.5)	World Bank, Worldwide Governance Indicators
Promotion of competition	Competition legislation (0–10)	IMD, World Competitiveness Center
Life expectancy	Life expectancy at birth, total (years)	World Bank, WDI
Income distribution	Gini coefficient (0–1)	OECD.Stat, World Bank WDI, UNU-WIDER, CIA Factbook
Enrollment ratio	Gross enrollment ratio, tertiary, both sexes (%)	UNESCO Institute for Statistics
Gender parity	Gross enrollment ratio, primary and secondary, gender parity index	UNESCO Institute for Statistics
	Gender gap of employment to population ratio (female/male)	International Labour Organization, ILOSTAT
Generation	Youth unemployment rate (ages 15–24)/total unemployment rate	World Bank, WDI
Trade	Trade (% of GDP)	World Bank, WDI
Trade freedom	Trade Freedom Index in Economic Freedom (0–100)	Heritage Foundation
Foreign direct investment	Foreign direct investment, net inflows (% of GDP)	World Bank, WDI
Foreign population	International migrant stock (% of population)	World Bank, WDI
International treaties	Number of joined environmental treaties (%)	ENTRI, Columbia University
Refugees	Refugees per population (per thousand people)	United Nations High Commissioner for Refugees

Btu = British thermal unit, ENTR I = Environmental Treaties and Resource Indicators, GDP = gross domestic product, IMD = International Institute for Management Development, OECD = Organisation for Economic Co-operation and Development, PM = particulate matter, PPP = purchasing power parity, USPTO = United States Patents and Trademarks Office, WDI = World Development Indicators, WHO = World Health Organization.

^a Sustainable Development Goals Collaborators. 2017. Measuring Progress and Projecting Attainment on the Basis of Past Trends of the Health-Related Sustainable Development Goals in 188 Countries: An Analysis from the Global Burden of Disease Study 2016. *The Lancet*. 390 (10100). pp.1083–1464.

Sources: As indicated in source column.