

MICHAEL J. MAZARR, ALEXIS DALE-HUANG, MATTHEW SARGENT

The Emerging Competitive Paradigm

A Contest of Effective Governance

Many factors determine the relative strength of nations, including great powers engaged in long-term rivalries. In the larger project of which this paper is one part, we examine the societal characteristics that produce *competitive advantage*—the qualities of nations that improve a nation’s relative standing.¹ We identified seven major characteristics that appear to be associated with success in almost any era or context: national ambition and willpower, unified national identity, shared opportunity, an active state, effective institutions, a learning and adapting mindset, and diversity and pluralism.

In addition to these seven characteristics, the study’s first phase also highlighted an intriguing, related theme. Many of our cases suggested that competitive advantage also emerges from meeting the demands of the prevailing *competitive paradigm*—the essential character of any era that sets the context for national success.² There were particular times in history when a confluence of economic, social, and military developments created an opportunity for competitive advantage by

Abbreviations

CCP	Chinese Communist Party
COVID-19	coronavirus disease 2019
DI	digital infrastructure
GDP	gross domestic product
IMF	International Monetary Fund
OECD	Organization for Economic Cooperation and Development
R&D	research and development

meeting the demands of the era, thus separating successful from failed nations. The first-phase study put it this way:

In the cases of Rome, Britain, and the United States, the dominant powers were countries whose package of societal advantages matched the demands of the era, whether they be demographic muscle and national will, industrial output and commercial connections, or grassroots initiative and technological advance. Partly as a product of these factors but also as the result of strategic choice, these nations then placed themselves at the hub of regional or international networks of economic, intellectual, and cultural exchange. The result was that they came to dominate critical components of the international orders of their day.³

Nations with greater alignment to the competitive paradigm of the period gain direct and tangible advantage in terms of economic output, technological sophistication, and military power. But they also benefit because other countries see them as one of the exemplars of the age, which produces an opportunity to become a gravitational center for the era's networks of exchange.⁴ And

nations with strong fitness to the demands of an era also gain domestic legitimation rewards, both material and ideological.

As much as some great powers benefit from their strategic context, others are effectively defeated by it. An important lesson of the industrial era was, as our first-phase report concluded, that “not all societies could effectively embrace this recipe,” and, as a result,

A nation whose politics, socioeconomic patterns, and established history and culture are at odds with key elements of the model will be blocked from easily adopting its core components and benefiting from its competitive effects. Such a society then fall [sic] into a long, slow decline, sometimes punctuated by defeat at the hands of more-competitive nations and then anger and scapegoating.⁵

This is the story, in part, of unsuccessful great powers—those that lost or fell irretrievably behind in long-term rivalries. They simply could not keep up with the times.⁶ The Ottoman Empire, Imperial Spain, and the Soviet Union are leading modern examples of this pattern.

Britain's trajectory since the 18th century offers one of the most telling examples of the power of the competitive paradigm to shape national fates. Britain gained a staggering degree of competitive advantage by becoming the dominant economic and trade power in the world. This was not replicated in all cases of alignment to an era's demands, but it demonstrates how the dynamic can work. The initial phases of the Industrial Revolution (sometimes termed the *first Industrial Revolution*) matched Britain's potential extremely well. As Eric Hobsbawm argued in his classic study of British economic history,

The Industrial Revolution marks the most fundamental transformation of human life in the history of the world recorded in written documents. For a brief period it coincided with the history of a single country, Great Britain. An entire world economy was thus built on, or rather around, Britain, and this country therefore temporarily rose to a position of global influence and power unparalleled by any state of its relative size before or since, and unlikely to be paralleled by any state in the foreseeable future.⁷

Paul Kennedy has documented the results. Britain, which had reflected a modest 1.9 percent of world economic output in 1750, by 1880 represented almost one-quarter (22.9 percent) of world gross domestic product (GDP). On a scale of social industrialization in which 1900 Britain ranked as 100, 1880 Britain stood at 87—compared with the United States at 38, France at 28, Germany at 25, and Japan at a meager 9. Britain was benefiting disproportionately from the “staggering increases in productivity emanating from the Industrial Revolution.”⁸ Yet as the first more grassroots and entrepreneurial phase of the Industrial Revolution gave way to the comprehensive industrialization and mass production of the second phase, Britain proved unable to keep up. Its global position, first economically and then geopolitically and militarily, suffered a long, gradual decay.

Our review of great powers and competitive paradigms suggested a troubling lesson: Failure to meet the test of new competitive paradigms appears to be the norm, rather than the exception. Imperial Spain’s slow adjustment to an emerging age of scientific progress and market-based economic power; the inability of the Austro-Hungarian or Ottoman empires to keep up with the modernizing

processes in other great powers; Britain’s lagging competitiveness in the second industrial era; the Soviet Union’s incapacity to adapt to the demands of the later, information-based industrial age; and other cases of major powers failing to master transitions are so common as to suggest that a failure to adapt to an emerging era is the default pattern. The United States may confront a historical tendency with worrying implications for the future of its standing.

This analysis highlights an important related finding: The benefits and costs of a nation’s degree of fitness to the demands of an era reach well beyond economic and technological domains. One critical measure of fitness to the strategic environment is a nation’s standing in the era’s basic economic model, its approach to value creation. But another measure deals with social and political structures and norms. Nations have fallen out of alignment with a competitive paradigm because their domestic institutions of governance and social interaction—and their social contract broadly defined—become anachronistic. They fall behind not merely because they cannot keep up with technology or industrial production but also because their society and politics cannot organize themselves to produce the necessary dynamism and adaptation.

This might be the most critical point of comparison between the United States and China today: whether one of these rivals is developing social and political institutions and processes with greater fitness to the emerging competitive paradigm. The Cold War, argues one new source, was “fundamentally a contest over which system of government could best harness industrial modernity to improve the lives of its people.”⁹ This is a useful shorthand for the essence of the new competition. It is a contest over which approach to governance and societal problem-solving can

best harness the postindustrial context to improve the lives and attend to the needs of its people.

Objectives and Approach of This Analysis

To assess these questions in this paper, we first define the character of a competitive paradigm and look to history for examples and their lessons. Also using historical sources as a guide, we propose a two-part framework for understanding the essential requirements for any nation to meet the demands of a paradigm. We then turn to the future, defining the specific characteristics and demands of the emerging 21st century paradigm. We conclude by summarizing the major implications of the analysis, both for diagnosing the current U.S.-China rivalry and for shaping U.S. strategic choices.

An important choice was time frame. Previous competitive paradigms have lasted between several decades and centuries, and so, at a minimum, any such analysis must look ahead into the medium-term future. From the standpoint of the main implication of these findings, regarding the U.S.-China rivalry, the period of the next 20 to 30 years is often held to be critical in determining the outcome of the contest. In broad terms, then, we sought to assess the competitive paradigm likely to set the context for national success out to roughly 2050 but with a broader general timeline of 50 years in mind.¹⁰

It is important to qualify the nature of the claims we make with this research. We gathered data from many historical and current trend-assessment sources, but different observers could draw divergent lessons from those data. This report offers a research-based, subjective judgment—a

level of such individual judgment is unavoidable when trying to anticipate the interactions of many complex variables. The rigor in the approach comes from the range and depth of sources consulted, the frameworks developed to organize thinking about competitive paradigms, and the discipline and transparency with which we translated trend and historical data into future expectations.

Any effort to identify meaningful eras in history also confronts the challenge of distinguishing evolution from more-fundamental break points. No period represents a wholesale abandonment of the habits and patterns that went before. Any competitive paradigm will reflect a mix of continuing and fresh characteristics.

Indeed, our analysis suggests that many of the essential characteristics of the later industrial-era competitive paradigm remain relevant to national competitive advantage. Those factors include key realities of the strategic context, such as the existence of nuclear weapons and a complex world trade and financial system; the centrality of world-class manufacturing and competitive position in critical technology areas; the role of information technologies in underwriting growth and productivity; the importance of synergistic networks of economic and technological advantage (i.e., public research and development [R&D], education and research institutes, and private sector deployment of technologies);¹¹ and the critical role of strong national financial institutions and sound public sector financial management. What it takes to succeed in the emerging competitive paradigm will continue to reflect many requirements for success during the industrial era.

Yet these characteristics will also be different in decisive ways that will help determine the fates of nations. This analysis contends that the late industrial era—a period

that might be thought of as the scientific-bureaucratic-industrial age—has reached an inflection point involving a series of intersecting crises in its fundamental assumptions and institutions. Combined with accelerating technological changes, these trends are producing an era in which transformations in governance have profound implications for national competitive advantage. We make this argument and spell out these implications in the following sections.

Defining a Competitive Paradigm

The concept of a competitive paradigm simply asserts that at any historical moment, the economic, technological, military, and other characteristics of the era or time create a context for national competitive success. In the late—and post–Cold War era, for example, with the rise of precision weapons and networked information architectures, countries that could not master the precision strike revolution operated at a competitive disadvantage. In an earlier period, countries that fell behind in industrialization were fatally handicapped, both in economic and military competitions. The various elements of industrialized national power constituted the competitive paradigm of that period.

A typical definition of a *paradigm* focuses on a set of beliefs or mental models of how the world works that helps to explain it.¹² Adam Smith defined a paradigm as “a shared set of assumptions. The paradigm is the way we perceive the world; water to the fish. The paradigm explains the world to us and helps us to predict its behavior.” Paradigms limit the vision and imagination of actors: “When we are in the middle of the paradigm, it is hard to imagine any other paradigm.”¹³ The business theorist Joel Arthur Barker defined a paradigm as “a set of rules and regula-

tions (written or unwritten) that does two things: (1) it establishes or defines boundaries; and (2) it tells you how to behave inside the boundaries in order to be successful.”¹⁴

But Barker goes beyond just ideas. “A paradigm . . . tells you that there is a game, what the game is, and how to play it successfully.” A paradigm shift represents “a change to a new game, a new set of rules.”¹⁵ This is precisely the change in epochs we have in mind with this analysis—periods when the basic game that great powers are playing, for national dynamism and power, changes, and a new set of rules comes to govern their efforts. He goes on to argue that old paradigms collapse when they can no longer solve key social problems. “Sooner or later,” Barker contends, “every paradigm begins to develop a very special set of problems that everyone in the field wants to be able to solve and no one has a clue as to how to do it.”¹⁶ The shift in a paradigm involves multiple intersecting changes that collectively undermine the validity of existing assumptions.¹⁷

Paradigms can prevail in specific domain areas—the current paradigm in chemistry or psychology or housing

A typical definition of a *paradigm* focuses on a set of beliefs or mental models of how the world works that helps to explain it.

construction, for example. But in this analysis, we have something more encompassing in mind: the global paradigm for national competitive success. Historically, such competitive paradigms tend to have six primary elements. We outline them in Table 1.

A competitive paradigm is not a catalog of every economic, social, political, technological, institutional, and military fact about an age. Instead, the concept of a paradigm refers to a subset of those realities, a few essential characteristics of an age that reflect the crux of national competitive advantage. It can be difficult to distinguish

the essential components of a competitive paradigm from the larger kaleidoscope of the era’s characteristics, in part because many shifting elements of that kaleidoscope will be somehow related to the core paradigm.

In addition, a given competitive paradigm will not dictate a common response from all political actors or a singular societal model. Recipes for success evolve over time even under the influence of a single competitive paradigm. As one survey of developmental models concludes, for example, “quite different constellations of characteristics appear to have been compatible with successful develop-

TABLE 1
Typical Elements Addressed by a Competitive Paradigm

Element	Definitions, Examples, Objectives
Economic	Sources of economic growth—human capital versus industrial production; role of demography; role of finance and capital; essential requirements for growth Objective: Growth in general economy, per capita wealth, productivity; over time, shared and equitable growth of varying degrees
Technological	Leading technological areas of the time; scientific and technological requirements for economic and military power Objective: Reaching global standards in selected areas or more generally
Military	Nature of military power at a given time and requirements for success; industrial-era militaries versus preindustrial; reconnaissance strike complexes versus prior forms of military organization and power Objective: Avoiding decisive ineffectiveness or weakness as baseline; achieving local or global military predominance as extreme goal
Political	Political models associated with competitive advantage—nation-state versus feudal patterns; regime type if associated with success Objective: Essential legitimacy of the political system; political stability; coherence; effective addressing of policy issues
Institutional	Types and character of institutions that produce effective competitive outcomes; financial institutions as a basis for national power; effective industrial bureaucracies Objective: Capable, legitimate institutions which create the basis for success in other goals
Social	Social patterns that provide competitive advantage; existence of a middle class and its effect on economic outcomes; degree of nationalism and commitment to national goals Objective: Social stability and coherence

ment and growth.”¹⁸ Even once a state has correctly diagnosed the existing paradigm, it still faces certain strategic choices about the mix of means and ways it will employ to flourish in that environment. A competitive paradigm is not equivalent to the strategies and policies of the leading states—those respond to, and are sometimes a function of, the elements of the strategic context and define the era.

But the range of choice is not unlimited. The lesson of history animating this analysis is that political actors must align themselves to the characteristics of the prevailing paradigm to be competitive. A preindustrial state could not match the overall national power of an industrial state in the 20th century. Even a state that had dominated the early Industrial Revolution in historically unprecedented ways—Britain—was not guaranteed to thrive as later industrialization changed the game for great powers. The critical point for analysis is to identify the baseline factors that any state must meet to succeed under a given paradigm and, thus, to also discover the areas of optionality.

Transitions between paradigms can be difficult to identify and assess. As we have noted, these eras tend to overlap rather than offer clear dividing lines. When a transition is in progress, those involved are rarely aware of it. Nations that ended up thriving in the new paradigm often did so because of happenstance—their social characteristics, size, culture, or other qualities happened to align to the requirements of the emerging period. There are exceptions to this, especially from the two industrial eras, when countries like Russia and Japan actively recognized the risks of being left behind and sought to catch up to the exemplars of the age. But, in general, the transitions between eras can be challenging to comprehend.

The rise of a new competitive paradigm, and the pressures it places on nations, represents a version of the dynamic of challenge and response at the heart of Arnold Toynbee’s theory of history. Toynbee highlighted the role of significant external challenges in spurring national development and argued that civilizations advanced most powerfully when facing challenges and effectively responding to them. Societies that faced no meaningful challenge or failed in their response eventually collapsed or faded into irrelevance. “Immunity from the challenge of encounters with civilizations is a very serious handicap,” he argued, even nominating a general “social law which may be expressed in the formula, ‘the greater the challenge, the greater the stimulus.’”¹⁹ In this sense, the rise of a new age or paradigm, and the demands it places on nations, can be a stimulus to greatness—if a nation has the qualities necessary to capitalize on the change rather than be victimized by it.

For the United States, the most urgent question today might be whether the emerging competitive paradigm will allow for—or even benefit—closed, centrally planned systems like China’s or whether the advantage of more open, free, grassroots, and market-based systems will continue. The answer will partly be determined by material outcomes, such as the degree to which competing systems master the sources of value creation and generate growth or their relative military power. But it will also—and perhaps more fundamentally—be determined by human factors: the achievement of an effective, updated social contract that creates a sense of legitimacy, justice, and dignity in societies; underwrites national and local solidarity; and addresses issues of ontological security.

National Alignment to a Paradigm: Essential Components

Having defined the concept of a competitive paradigm, we then looked to a variety of historical sources for clues about what it takes for nations to meet the demands of such a paradigm. To do this, we reviewed historical cases surveyed for the first phase of this work and conducted for this paper. We assessed candidate elements with subject-matter experts on international relations, including at a workshop held for the purpose. The result is a hypothesis, not a definitive finding—it represents one potential interpretation of the evidence, which seems to best capture the available cases. Our research suggests that all processes of aligning to a given competitive paradigm share two common elements. These are discussed in the following sections and summarized as follows:

- Leadership of the era's economic, technological, and human sources of value creation

Z Component elements

- Primary sources of economic growth and development
- Leading technologies and sources of technological innovation
- Forms and sources of human capital
- Natural resource and energy endowments

Z Evidence (cases supporting this argument)

- Netherlands in the Golden Age: trade and financial power
- Britain in the early industrial era: sources of energy, beginning of mass and factory production era, application of scientific method

to economic advantage, specific efficiency-producing technologies

- Germany and Japan in the late 19th and early-to-mid-20th centuries: industrialization leading to manufacturing and military power
 - The United States in the 20th century: manufacturing power, technological innovation, computing power and integration
 - South Korean state-led economic development, which produces world-leading technological power, manufacturing, and trade
 - Negative cases and proof from failure to meet requirement: later Italian Renaissance city-states, Ottoman Empire, Soviet Union
- A valid social contract appropriate in the era

Z Component elements

- Political relations: level and type of representation
- Economic relations: economic guarantees and forms of public assistance
- Security relations: types of safety guaranteed by contract

Z Evidence (cases supporting this argument)

- Britain in the early industrial era: aristocracy with enduring legitimacy offering widening opportunity across classes and political participation, economic growth and scientific advances legitimizing the system, rising social protections embodying shared contract
- Germany and Japan in the late 19th and early-to-mid-20th centuries: elements of aristocratic or oligarchic social patterns but with increasing social mobility and opportunity, economic

growth, nationalistic credibility from rising relative power

- The United States in the 20th century: significant social mobility, shared opportunity, widening civil rights granting legitimacy to national narrative; economic growth, technological progress; global relative power legitimize system; rising social protections embodying shared contract
- South Korean system grounded in cultural values and post-Korean War nationalist drive for success: sufficient degrees of shared opportunity and social mobility, emergence of democracy legitimizing overall social contract

Leadership of the Era's Economic, Technological, and Human Sources of Value Creation

This factor embodies a nation's ability to thrive in an era's basic avenues to national economic development and technological sophistication. The most well-known example of such a dynamic is the Industrial Revolution, which brought into being a new standard of value creation against which all great powers were judged. The late industrial or information age imposed new and even more challenging demands; the Soviet Union could not meet them, and the transition accelerated its demise.

Whatever the source of their ability to compete in general terms, to succeed, nations must meet the demands of this most essential economic-technological component of any paradigm. Our first-phase analysis identified numerous examples of this basic relationship. Alignment

with the core value creation model of the industrial era was a centerpiece of the national advantage enjoyed by Great Britain and the United States and was also characteristic of other major powers who became industrial juggernauts, including Germany and Japan. The U.S., Japanese, Korean, Taiwanese, and, in many cases, European alignment with the 1990s-era information age value creation model provided significant competitive advantage. In earlier periods, a combination of financial sophistication (an economy benefiting strongly from trade and, in some cases, from the acquisitive value of colonies) and domestic social contexts with strong scientific and intellectual qualities helped the Renaissance Italian city-states and such countries as the Netherlands align themselves to their era's value creation models.

The most well-known example of such a dynamic is the Industrial Revolution, which brought into being a new standard of value creation against which all great powers were judged.

An Effective Social Contract Appropriate to the Times

The other essential component of any competitive paradigm, certainly in the modern era, is the character of a nation's *social contract*—the implicit agreement among members of a society governing mutual behavior and the balance of rights and benefits, especially in terms of social collaboration for common good.²⁰

The strength of a social contract can be measured in several ways. It can be a function of the degree to which norms of interpersonal contact are understood and respected, related to the degree of interpersonal trust in a society. Strong institutions, especially nongovernmental ones underwriting social ties, contribute to a social contract, as does an effective and equitable rule of law. Perhaps most of all, a robust social contract relies on the objective reality and perception of the strength of the essential bargains involved—the rights and benefits people acquire and the common good that is being promoted. A widespread sense of victimization, unfairness, and concentration of wealth and power are all inimical to a resilient social contract.

An effective and era-appropriate social contract lays the foundation for competitive advantage in the following ways:

- It is essential for a basic legitimacy of governing institutions.
- It is a leading foundation of social resilience against internal and external threats, in part by promoting the political cohesion of the country.

- It underwrites the attractiveness and appeal of a nation abroad and helps affirm the effectiveness of its basic societal model.²¹

Earlier research in this project supports this claim in two major ways. First, many of our case studies turned up evidence for the causal relationship between a strong social contract and sustained competitive success. The nature of the social contract on offer differs radically over time, but there are clear patterns of political, economic, and security elements of effective contracts at work in the Roman Republic and early empire, Italian Renaissance city-states at their peak, the Netherlands during its Golden Age, mid to late Victorian Britain, and the United States from the early 20th century through at least the 1970s. In each of these cases, we found identifiable links between the effects of those social contracts and national success.

Project research also supports the connection between an effective social contract and sustained competitive success in narrower ways backed by empirical research. Providing a basic sense of economic opportunity and security appropriate to the era is one part of this concept—research confirms the link between social mobility, economic equality, and perceived opportunity and economic growth. Sociopolitical instability—which can be a product of a failed social contract—negatively affects economic growth and can undermine a nation's pace of innovation and its capacity to organize a coherent competitive strategy.²²

A strong social contract and governing legitimacy implies, in turn, a related social quality associated with effective alignment to a competitive paradigm: solidarity. In its discussion of both a unified national identity and national ambition and will, our first-phase study suggests that nations that have successfully mastered the competi-

tive paradigm of their age did so in part through the positive effects of solidarity at national and local levels. The resulting degree of social stability, mutual commitment, and will together offers a critical competitive advantage in responding to the demands of a new paradigm. Measures of the degree of social solidarity can, therefore, provide an important clue to a nation's competitive potential.

There is also an international parallel to the domestic social contract, although it is not the central requirement and is generally only an echo of the domestic piece. Great powers typically offer some sort of thin social contract to other nations (and groups) that agree to align with them in significant ways, often through participation in institutions. A leading example is the U.S.-sponsored, postwar international order, which offered bargains in terms of trade, investment, (in some cases) security, and participation in a growing set of international institutions that set standards and trained government officials.

Our research did not allow us to establish a specific threshold for sufficiency—how robust of a social contract a nation needs to flourish. Historically, societies have been able to muddle through with imperfect social contracts. In some cases, countries embody a social contract among critical subcomponents of their populations only, which may be enough for stability. Saudi Arabia, for example, could be said to have one social contract for its citizens and another for its broader population, including guest workers. Our research supports the connection between a robust and effective social contract and meeting the requirements of a competitive paradigm but does not provide a basis for making fine-tuned judgments about what precise degree of robustness is required in any given context.

What Success Looks Like

Many historical cases give some indication of what it can look like to succeed at meeting or failing to meet the demands of a competitive paradigm. Broadly speaking, we have in mind a relatively straightforward distinction. Those who gain competitive advantage from a paradigm tend to accelerate their economic growth and technological development, bolster their relative military power, and experience periods of social dynamism and stability that combine to push them to the forefront of the hierarchy of world power. Britain in the first Industrial Revolution and the United States in the second are classic examples of the relative power implications of meeting the requirements of a paradigm.

Yet some national experiences represent partial and incomplete examples of the same phenomenon—cases that complicate the task of identifying clear winners and losers from new paradigms. In earlier periods, for example, pure size could count for much. In 1820, according to Angus Maddison's estimates, China and India had the world's largest GDPs by far, at least measured in purchasing power parity terms.²³ Aided by land mass, geography, weather, and masses of peasant soldiers, Russia defeated Napoleon in 1812, although France—with its advanced scientific community and Napoleonic development of state capacity—was far more aligned to the scientific and first industrial revolutions. Although falling ever further behind the leaders of the scientific and industrial age, the Ottoman Empire limped on, remained an important regional player, and might have lasted much longer if not for the shock of World War I.

Then there are examples of countries with domestic societies and economies well aligned to the requirements of

an era but with less relative geopolitical power because of pure issues of scale or as a result of national choice. Countries like the Netherlands and the Nordic nations are excellent modern examples, as are South Korea and Singapore. They gain competitively in many ways—including achieving high relative standing in specific industries—from their ability to meet the demands of the era. But they are too small to compete with great powers for relative geopolitical influence.

The case of Japan provides a fascinating example of the challenges of assessing whether and to what degree a country succeeded or failed to align to a competitive paradigm. In the Meiji era, Japan’s government acquired lessons from abroad and catapulted itself into the industrial age. By the late 1930s, it had achieved remarkable

The case of Japan provides a fascinating example of the challenges of assessing whether and to what degree a country succeeded or failed to align to a competitive paradigm.

technological and economic progress for a country that had been a primarily agricultural nation.²⁴ Coming out of World War II, Japan experienced what has been called “the Japanese economic miracle”; the country sustained annual growth rates over 7.5 percent from the 1950s through 1973 and continued at impressive levels into the early 1990s.²⁵ By the 1980s, numerous U.S. commentators were warning that the United States risked being economically and technologically surpassed by a more-driven and efficient Japan.²⁶

And then, all at once—sparked, in part, by a financial crisis—the miracle gave way to stagnation as Japan entered a 30-year period of slow growth and social disquiet. As one source notes,

In the early 1990s, the nation lost its status as an economic juggernaut—the model to emulate in industrial policy, management techniques, and product engineering—and found itself a beleaguered nation in its worst recession since World War II. Japan’s political process now appears hopelessly stalled, its bureaucracy top-heavy and meddlesome, and its business practices entrenched and inflexible. The competitiveness debate of the 1980s has petered out as the resurgent U.S. economy leads the way into the Information Age. It is as if Japan, the eager pupil of U.S. business success, had briefly become the teacher only to be demoted after a few lectures.²⁷

Japan’s economic growth since 1990 has generally hovered between 0 and 2 percent, with an initial period of economic doldrums so stark it gained the dismal term of the “Lost Decade.” Living standards in the country continued to fall through 2023.²⁸

The causes of this reversal are numerous and partly contested: the collapse of asset price bubbles, demographic decline, government and private sector hesitancy in pursuing needed reforms and stimulus, rising levels of debt, and many others. In 1970, most observers would have counted Japan as one of the greatest competitive success stories of the second Industrial Revolution—both in terms of its rapid late 19th and early 20th century catch-up and the postwar miracle. By 2000, its fate served mainly as a cautionary tale.

In some ways, Japan proved to be one of the most-capable nations in the world of gaining competitive advantage through industrialization. But it illustrates that continuing to benefit from a paradigm is as much about sensible policy and responsiveness to challenges and setbacks as it is about a few very broad socioeconomic trends. However, Japan cannot be viewed as a complete failure in dealing with the demands of the late industrial era: Its leading firms continue to display incredible industrial sophistication, its people enjoy long life spans and high standards of living, it has one of the region's most effective militaries, it generates significant cultural power, and it continues to enjoy strong national identity. It clearly belongs in a category of countries that are just below global geopolitical titans but still display significant degrees of success in being competitive within the parameters of the era.

The Modern Context for U.S. Predominance: The Second Industrial Era

Competitive paradigms have shaped the rise, stagnation, decline, and collapse of major powers. The most important and recent of these was the Industrial Revolution—by far the clearest example in history of an economic, technological, social, and military change in the context for competition, which provided some nations with a competitive advantage and pushed some downward. Even before the Industrial Revolution, however, other periods in history appear to have reflected a similar phenomenon.

Preindustrial and Early Industrial Paradigms

There is no single or definitive list of competitive paradigms across history. The premodern and early modern eras offer several examples of such paradigms, although the definitions, periods, and characteristics of these eras are contested. They blur into one another rather than offer clear cut-off points in history. Our research was not designed to offer a comprehensive roster of previous competitive paradigms, but the research did suggest at least two examples and a third that overlaps with the second.

One premodern paradigm might be termed the *societal revolution*, describing an initial paradigm of simple state capacity—the ability of a nation (or empire) to generate national power through both the resources at its disposal and the degree of political coherence it can build. This was the era of the first truly great political entities capable of large-scale state endeavors, including

war-making, building and infrastructure, and the economic management of large areas. This paradigm arguably demanded sufficient sources of wealth, domestic or acquired, to fund state activities; a limited but sufficient and loyal managerial bureaucracy, often fed by organized training or recruitment systems; large, reconstitutable armies; a deep capacity for resilience and recovery (i.e., resources, manpower); and a coherent political identity generating loyalty through effective rule and national energizing myths. Examples of the premodern empires and states that met these demands included Egypt; Rome; some Chinese dynasties; and perhaps, as a late example, the early Ottoman Empire.

A second period commonly discussed as a possible competitive paradigm is often termed the *scientific revolution*. Its origins were in the 16th and 17th centuries, when the scientific method emerged as a distinct form of knowledge and was applied to hundreds of applications, catalyzing economic growth and technological progress.²⁹ It empowered competitive advantage in many large and small nations through technique, professionalization, and technology. This paradigm was characterized by a richer set of intellectual institutions, such as universities and republics of letters; improved mechanisms for information storage and exchange; increasingly professionalized public functions, such as bureaucracies and militaries; stronger financial institutions; a growing role for intellectual and business entrepreneurs; and added emphasis on legitimacy through rational governance and performance rather than myth and heredity. Examples of nations that gained competitive advantage in this period include the Italian Renaissance city-states; Britain in the 17th and 18th centuries; and, later, Prussia in the 18th and 19th centuries.

A third paradigm—one overlapping with and not always distinct from the scientific revolution—is a period commonly termed the *first Industrial Revolution*. Beginning in the mid-18th century and running for roughly one hundred years, this period saw the first explosion of technological advances in various areas of economy and society in ways that began the hockey stick growth of productivity. Britain was the first and dominant beneficiary of this revolution for reasons that have been debated ever since. The first Industrial Revolution embodied advances in areas such as steam power, localized manufacturing, improvements in infrastructure and transportation, and better agricultural techniques.³⁰ These changes had dramatic social implications as well, creating both intense challenges (pollution, grinding factory work, rising inequality) and opportunities. Britain (and, soon enough, the United States) began to gain significant competitive advantage from being exemplars of these revolutions, but the competitive hierarchy was not yet as stark as it would become in the second Industrial Revolution.

Each of these previous paradigms—and the most significant paradigm so far, the second Industrial Revolution, discussed in the following sections—reflects several characteristics or factors common across political organizations of the age. First, each of the paradigms embodies a basic social contract that provides coherence and legitimacy to the governing structures. For the societal revolution, it was a form of mutually agreed, highly stratified roles and responsibilities in which masses of lower-class people accept the right to rule of a sometimes-hereditary elite. In the scientific and first industrial revolutions, the social contract began to embody greater degrees of expanded franchise, equal opportunity, and individual-

ism. The social contract of the Industrial Revolution was grounded firmly in economic advances and the promise of a better life.

Second, each of the eras reflects different versions of the primary model for success, as well as secondary or outlier approaches that achieve narrower but still important competitive advantage in different ways. During the societal revolution, smaller city-states used trade, scientific and intellectual sophistication, financial power, and other means to build power beyond their social mass (the Italian Renaissance city-states were perhaps the apogee of this model). Some nations managed to remain geopolitically potent and competitive during the first Industrial Revolution even without fully embracing its technological and social changes, partly by relying on their pure size and heft (as in China, Russia, or the Ottoman Empire). In the Industrial Revolution, some smaller nations that could not compete in the mass industrialization model of the era were able to achieve significant measures of success by specializing in one or more technologies or areas of manufacturing (or even services, such as tourism). Others have advanced through immense natural resource reserves.

Third, each era embodies a fundamental pattern of warfare. War in the societal paradigm was waged by mass and, often, partly professional armies that employed relatively similar weapons and tactics for many centuries. The scientific and first industrial revolutions brought more-professionalized and technically sophisticated armies to the fore, in some cases wielding useful although not always decisive new technologies. The industrial paradigm saw a return to mass, with vast armies employing mass-produced weapons and organized in hierarchical military organizations.³¹

Our review of this history also suggests that competitive paradigms begin to enter crises when their ideas and habitual solutions no longer appear to deal with the problems they encounter—a transition that can be evident when nations begin to experience negative marginal returns from additional investments in its core model of national power and legitimacy.³² Citizens and elite alike lose faith that the existing model will deliver, and the system can enter a spiral of lost credibility and demonstrated failures.

Defining the Second Industrial Era

These phases of history culminated in the second late industrial era, which has prevailed since roughly the late 19th century and offers perhaps the most important example of the way that successful (or failed) alignment to an era's fundamental demands decisively affects national competitive advantage. This paradigm became for the United States what the first industrial era was for Britain: an era for which the country was, in many ways, ideally suited (or became so by making essential decisions, such as the expansion of the size and catalytic role of the federal government) and during which the country advanced to world leadership. This was true in the mature or late industrial era (the period during which Britain began to struggle to keep up) and remained so during the following but closely related information age.

As a competitive paradigm, the second industrial era reflected the following several major characteristics:

- high growth (created the basis for addressing many social problems and created a basic context for national power and legitimacy)

- an urbanized and increasingly cosmopolitan environment, eventually globalized
- an essential grounding in science and technology as the catalysts of economic activity and national strength
- a domestic division of labor creating thousands of specialty careers with an associated rise in the importance of skilled labor in key industries and fields
- a rise of truly mass manufacturing and industrial management principles
- a growing scale of businesses, larger firms, mergers
- a growing size and sophistication of bureaucracies, public as well as private
- an increasing emphasis on individual rights, entitlements, self-expression
- openly shared knowledge: scientific, technological, social, political, often governed by a clear set of common information sources—at least among the elite—that generate some degree of a shared narrative about reality and events
- a breakdown of purely aristocratic class; permeability of class boundaries; end to officially sanctioned slavery and various forms of indentured servitude; an expanded capacity for upward mobility, especially intergenerationally; compared with the feudal era immediately preceding it, very different, and, compared with all previous eras, more comprehensive and assumed for all the population
- a rise of middle classes as the dominant sociological component of industrial societies.

The United States turned out to be well-positioned to benefit from these: a large country with a powerful and

growing private sector capable of forming into big firms, an increasingly educated workforce with essential skills, a potent and rapidly growing industrial sector, a nation with a burgeoning middle class experiencing growth in standards of living and intergenerational mobility, and a political system able to support these advantages with helpful interventions. This variety of factors suggests that the era could perhaps best be understood as a *scientific-industrial-bureaucratic era*—one involving a combination of the scientific revolution, industrial production models, and bureaucratic-administrative institutions.

As noted, analysts often subdivide the industrial era into multiple periods (most commonly a first and second Industrial Revolution), each of which has many characteristics of a somewhat independent competitive paradigm. The distinctions emerge, in part, in the fact that countries that mastered one of the sub-eras did less well in others: Britain trying to make the transition from the early, family-firm capitalism of the first industrial era to the mass production, massive industrial elements of the second; the Soviet Union achieving significant early growth (especially under the New Industrial Policy) in the second Industrial Revolution but being utterly unable to keep pace in the computer age. It is possible to see the emerging paradigm (as some have indeed said) as merely a fourth version or type of an industrial age. But it is still an identifiable paradigm with its own demands.

Much as Britain did in the early Industrial Revolution, the United States came to be the gravitational hub of its later periods. Immediately following World War II, with the devastation suffered by many other industrial economies, the United States represented roughly half of world economic output. In 1950, its GDP of \$381 billion (in 1964

dollars) was over triple that of the Soviet Union (\$126 billion) and, incredibly, more than the Soviet Union, Britain, France, West Germany, Japan, and Italy combined.³³ Even by 1960, the U.S. economy still represented 40 percent of world output. That share steadily (although unevenly) declined over time with the recovery and eventual rapid growth of many other countries. Apart from some momentary surges, the U.S. economy has remained about 25 percent of world GDP since the 1970s.³⁴

The so-called information age built on these essential characteristics with a growing and increasingly decisive role for information technologies. The information age is sometimes treated as its own unique paradigm, a new era distinct from the Industrial Revolution; much like most such paradigms, they overlap and mix. For this analysis, we conceptualized the information revolution as a late industrial era phenomenon, under which many defining features of that industrial period—mass industrial production, mass education, the basic structures of societies and militaries—remained relatively constant. Perhaps the central defining feature of the era was the effect of computing power and software applications in supporting technologies and processes of greater speed, efficiency, and effectiveness. These advances powered the expansion of key sectors of the economy, some degree of enhanced general productivity (although the scale remains disputed), and transformed military operational effectiveness.³⁵

Here, again, the United States found itself in an enviable competitive position. Its innovation ecosystem, including the rise of venture capital firms, helped nurture the companies that would become the early giants of the information economy. The pressure for competitive advantage in the U.S. private sector led to a race to adopt and

make effective use of information technology. Its openness to immigrant talent helped it benefit from the essential contributions of thousands of foreign-born engineers and entrepreneurs in the technology sector. Meanwhile, the Soviet Union could not keep up. As two scholars have argued,

The collapse of the Soviet system occurred precisely at a time when the mission of industrialization had been exhausted and when the imperatives of post-industrial society had begun to assert themselves. The Soviet system turned out to be incapable of responding to these imperatives and it was this that brought about its downfall.³⁶

The result was a further surge of U.S. growth and competitive advantage. During the 1990s, U.S. growth and productivity reached levels not seen since the 1960s. Between 1995 and 1999, labor productivity grew by 2.7 percent per year, economic growth ran at 4.5 percent a year, and unemployment fell to 4.0 percent.³⁷ The period from 1993–2000 constitutes the longest U.S. economic boom of the postwar period. Although the sources of this economic surge remain contested,³⁸ many studies tied these results, at least in significant part, to the efficiency- and output-enhancing effects of computers and software, the cost of which was declining rapidly in this period.³⁹ The United States, therefore, reached a peak of power during the mid-to late Industrial Revolution (roughly the 1930s through the 1950s) that represented a rough analogue to Britain's position earlier in the modern era. It became the predominant global economic and eventually military power, one that represented the driving force of the age, the hub of its key networks, and the dominant cultural power.

The Emerging Competitive Paradigm: A Governance Revolution

We have so far attempted to define the idea of a competitive paradigm, describe the essential requirements for successfully aligning to the demands of such a paradigm, and review several previous competitive paradigms. From this essentially historical assessment, we then looked forward and sought to capture the most-important characteristics of the competitive paradigm likely to prevail over roughly the next three to five decades. The perspective is broad and global, although ultimately designed to generate implications for the United States. Many of the examples used to illustrate the analysis (particularly in the online annex, which provides more detail on the trends producing this new paradigm) thus refer to the United States—but the paradigm we describe will apply equally to all nations.

Developing a future-oriented portrait of a strategic context is one of the most difficult challenges in strategic analysis. Any such endeavor represents an exercise in imaginative forecasting with all the attendant risks of predictive analysis.

Our basic approach was inductive. We evaluated an extensive array of sources on the major trends underway in the defining components of a paradigm (economy, society, military affairs, and geopolitics) and derived general patterns from them. We first reviewed the work of the first-phase study and identified factors and issues that helped to shape prior competitive paradigms as a guide to what to look for in the future. We then surveyed a core set of broad-based assessments of global trends, which themselves reflect broad literature reviews, expert surveys, and independent assessments.⁴⁰ From that work, we derived

an initial list of possible trends. We then followed up with issue-specific research on trends underway in each of the broad categories that comprise a competitive paradigm.⁴¹

The following list outlines the resulting set of trends that will fuel the emerging competitive era:⁴²

- Society
 - Z aging and smaller populations in much of the world; demographic growth in selected regions
 - Z challenges to the effectiveness and legitimacy of social and governing institutions
 - Z growing perception of the rule of an oligarchy or kleptocracy; power in society benefits an elite
 - Z persistently high rates of alienation, anxiety, social stress
 - Z rising political polarization, domestic fragmentation and extremism
 - Z continuing threats of pandemics.
- Global context for power and influence
 - Z growing influence for nonstate actors, especially in open societies
 - Z interdependent supply chain networks
 - Z integrated, increasingly digital financial networks
 - Z competition in digital infrastructures (DIs).
- Economy
 - Z secular stagnation; long-term decline in growth and productivity rates
 - Z rising levels of wealth and income inequality; stagnant intergenerational mobility
 - Z transition to post-fossil fuel economy; competition to dominate new energy era
 - Z increasing applications of and threats from biotech

- Z growing role for advanced manufacturing
- Z pressure of rising public and private debt loads.
- General and contextual
 - Z role of artificial intelligence (AI)/machine learning and automation in all economic, social, and military processes
 - Z fragmenting and corrupted information environments
 - Z intensifying environmental pressures, disasters, and crises, including water issues
 - Z rising threats to homelands
 - Z greater multipolarity in geopolitical and geo-economic terms
 - Z demand for partial national self-sufficiency in critical materials, resources, and technologies
 - Z high levels of uncertainty, driven by recurring, overlapping crises.

The next step in our assessment was to translate the complex mosaic of trends noted above into an overarching theme. No single phrase or concept will capture such a rich tapestry of trends and developments. Nonetheless, locating a single dominant thread in an era can help interpret events and provide a clear frame for policy responses. Settling on such a leading, singular theme will require an admittedly subjective interpretation of the data. Our interpretation is supported by evidence: not only the data from individual trends but other indications of the most-significant themes derived from assessments of the current context cited throughout this essay. Nonetheless, as noted above, this analysis can suggest only one plausible interpretation of the emerging future.

Our analysis suggests that a new pattern might be emerging that builds on the previous three competitive

paradigms but represents a significant course-correction from the scientific-bureaucratic-industrial era. We have termed the emerging paradigm the *governance revolution* to indicate that it has to do with the ability of societies to overcome the calcifying, fragmenting, and polarizing tendencies and self-generated risks of the late industrial era by employing new approaches to problem-solving and decisionmaking.

In one sense, the term *governance* has much in common with the well-established concept of *state capacity*—a state’s ability to realize outcomes it decides to achieve.⁴³ Sustaining truly meaningful state capacity (and offering an effective and legitimate social contract) in the emerging paradigm will demand new ways of doing business and reforms to existing institutions that comprise a governance revolution. “The main political challenge of the next decade will be fixing government,” John Micklethwait

In one sense, the term *governance* has much in common with the well-established concept of *state capacity*—a state’s ability to realize outcomes it decides to achieve.

and Adrian Woolridge argue. “Countries that can establish ‘good government’ will stand a fair chance of providing their citizens with a decent standard of life. Countries that cannot do this will be condemned to decline and dysfunction.” A governance revolution, they predict, “will be the heart of global politics.”⁴⁴

But we use the term *governance* broadly to refer to actors and initiatives beyond state capacity or actions. A major theme of the emerging era is that competitively successful societies will generate problem-solving governance functions from many sources.⁴⁵ Many definitions of governance speak to authority structures beyond government. One United Nations agency, for example, suggests that the term “refers to all processes of governing, the institutions, processes and practices through which issues of common concern are decided upon and regulated.”⁴⁶ A wide variety of public, nongovernmental, and private sector actors participate in such processes and are thus part of the architecture of governance in a society. This usage overlaps with two characteristics highlighted in the first-phase study—effective institutions and an active state—but is broader than either and refers to a general priority on effective operation of social organizations. Critically, too, it implies that social organizations are capable of acting efficiently but also in their own long-term self-interest.

Figure 1 depicts the basic defining factors of the governance revolution. Its core message is that the main barrier to competitive advantage now emerges from two sources: the gradual ossification of industrial-age governing institutions and the risks and threats posed to nations by the multiple challenges to modernity. Put simply, late modernity has generated a raft of economic, environmental, social, and technological risks, threats, and opportunities,

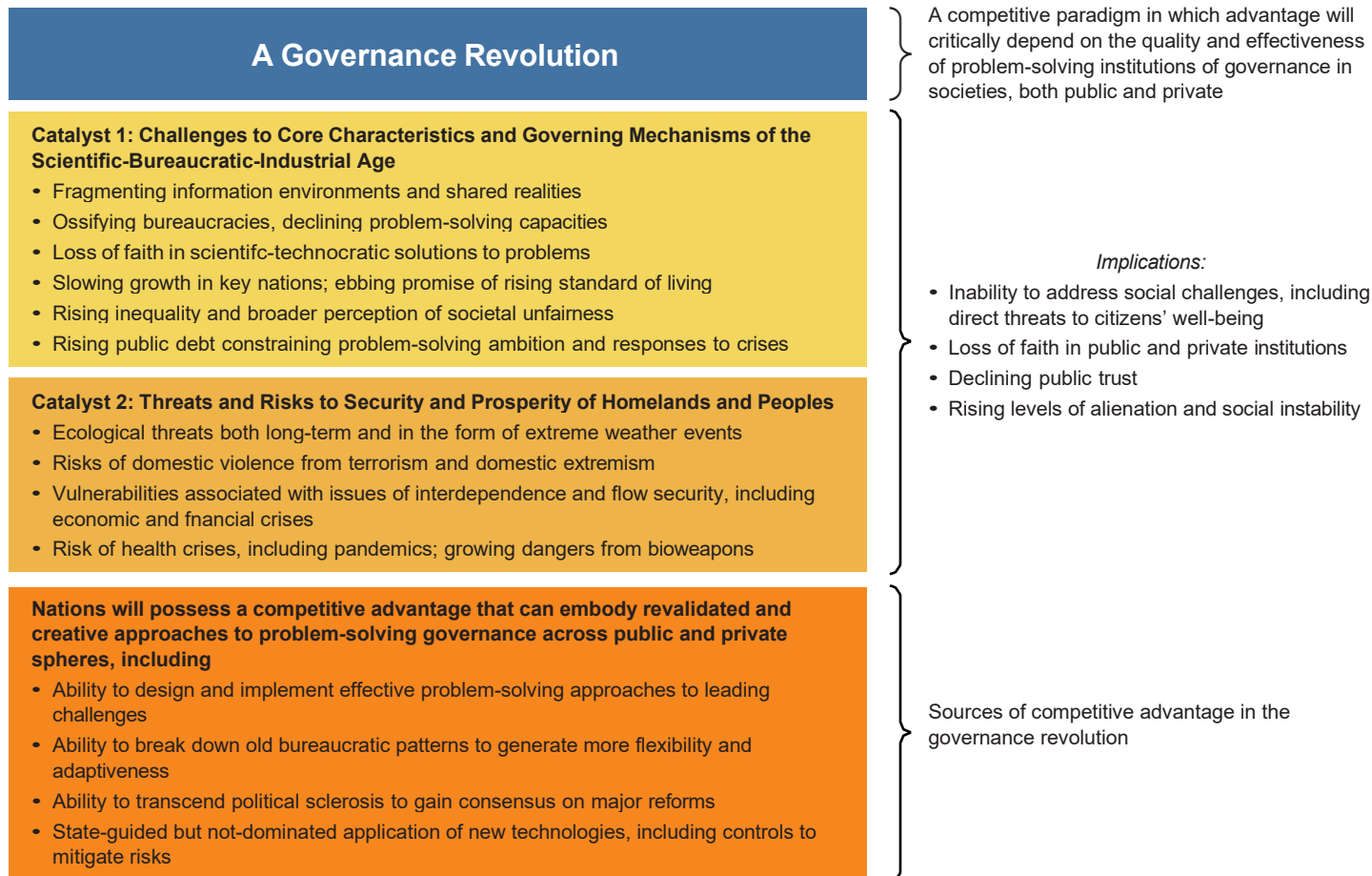
and the governing institutions of the industrial age may no longer be adequate to deal with them. Nations that can develop and employ reformed or new governing models to take decisive action in dealing with risks, remain adaptive and resilient, and seize opportunities will gain competitive advantage in this era. This development certainly requires participating in the technological advances of the age and being able to generate late industrial, information-powered, and automation-powered economic progress.

The need to keep up technologically, in part to align to the era’s value creation model, has, therefore, not disappeared. But the essential story of competitive advantage in the emerging era is not breakneck progress in areas such as AI and biotech but rather the creation of governing models (public and private) capable of sustaining or restoring vibrancy, efficiency, and legitimacy to national power structures. Whereas competitive advantage in the industrial paradigm came primarily from mastering the era’s sources of value creation, advantage in the governance paradigm will derive more fundamentally from an improved social contract and the governing principles and institutions that support it. Nations that solve the ongoing crisis of legitimacy and institutional efficacy—and, in the process, take positive steps to deal with growing risks—will win in the emerging paradigm.

We do not argue that the pursuit and achievement of a governance revolution is inevitable for great powers any more than the scientific, technological, and organizational aspects of the Industrial Revolution were an inexorable outcome of the previous era (as Russia, China, and dozens of poor countries learned, they were not). We argue that multiple trends are creating a context in which effective governance will become a predominant source of competitive

FIGURE 1

A Governance Revolution: Primary Defining Elements



advantage. The age demands effective governance—which is not the same as saying that the emerging context will be one of effective governance. Whether nations respond to the era’s rising demands with policies that create strong fitness relative to these demands is a different question.

We define *governance effectiveness* via the following principles, which apply to societies as a whole rather than merely state or government institutions:⁴⁷

1. the capacity to design and implement at least partially effective and efficient action to deal with challenges, opportunities, or risks, which creates a measurable improvement in the issue area
2. being perceived to be acting in these ways by elite, expert, and public communities and, thus, sustaining a significant degree of legitimacy in their eyes
3. retaining a sufficient degree of accountability, transparency, and representativeness in their operations, both to enhance the quality of their action and to sustain public support
4. routinely incorporating considerations of long-term versus immediate goals (including foresight and anticipatory thinking and processes), as well as elements of common and public interest versus self-interest in their calculations, again generating a perception of governance quality among elites and the public alike.

Our portrait of the emerging competitive paradigm implies that innovative, effective, and legitimate governance structures and approaches that meet these criteria are the central route to competitive advantage. This is true for two fundamental reasons: (1) There is a crisis in the essential structures and habits of the current paradigm,

and (2) there are threats to national security and well-being that now demand decisive and effective governance to combat.

Characteristics of an Era Under Strain

Much of the international competitive story of world politics between about 1750 and 1950 involved the tremendous competitive advantage granted by industrialization in various phases and the accompanying processes, such as the scientific revolution and the information revolution. That competitive paradigm could be termed, broadly, the *scientific-industrial-bureaucratic era*, and it is composed of several major component characteristics or hypotheses:⁴⁸

- Human society has the capacity to produce consistent and steady progress, as measured in standard of living and individual opportunity. Economic development is the core trend and value of the era.
- Science and technology are the fundamental driving force of this progress.
- The scientific method and associated scientific understanding of the world allows for solving specific problems and a more general mastery of human and natural affairs.
- A marketplace of ideas in the public sphere produces debates over claims and counterclaims that objectively advance understanding of key issues and form the essential foundation for democratic deliberation.
- Societal advances can be expected to produce significant gains in shared economic prosperity.
- These advances also tend gradually to generate more human autonomy, freedom, and dignity in

various categories, expanding the scope of social and political freedoms.

- Networks of exchange, notably in trade in goods and resources, generally work to common advantage and provide another spur to progress and development.
- Large bureaucratic-administrative entities are essential to the organization of modern societies and can effectively manage key social and economic sectors.
- Military power is primarily a function of two variables: technological sophistication as translated into military capabilities and the industrial might to produce hardware on a large-scale basis. Security is a function of the ability to fight major conventional wars.

The upshot of many of the trends reviewed for this analysis, however, is at least a partial challenge to these central characteristics of the scientific-industrial-bureaucratic era with significant implications for the effectiveness of governance and the legitimacy of nations.⁴⁹ Table 2 reviews many of these challenges—some objectively measurable, others the product of more-subjective but still evidence-based analysis. The accumulating effect of these trends has the potential to generate a culminating point at which the challenges to the current paradigm become critical enough to open the possibility of new sources of competitive advantage and disadvantage.

A Crisis of Governance and Legitimacy

Many of these trends add up to a comprehensive challenge for the problem-solving and society-shaping institutions of

the current paradigm. Jürgen Habermas offers a useful way of defining a period of crisis for any era or the established institutions of the time: an inability of the “self-healing powers” of a society to keep up with the challenges to its vigor. He emphasizes the importance of effective action to confront challenges. “Crises arise when the structure of a social system allows fewer possibilities for problem solving than are necessary to the continued existence of the system.” The result is a perceived and actual loss of effectiveness of the “steering mechanisms” of a society, which strikes at the very heart of its purpose: to master the complexity of the world in ways that offer physical and ontological security to its members.⁵⁰

This is the core of the challenge to the scientific-bureaucratic-industrial age: Actual and perceived failures in the objective capacity and perceived legitimacy of mechanisms of self-healing are reaching an inflection point.

TABLE 2

Challenges to Key Characteristics of the Scientific-Industrial-Bureaucratic Era

Characteristic of Scientific-Industrial-Bureaucratic Era	Current Trends and Risks
Expectation of consistent progress as measured in standard of living and individual opportunity; economic development as leading value	• Secular decline in productivity growth rates • Slowing economic growth rates • Demographic shifts and aging societies • Stagnating or even reversing levels of intergenerational social mobility • Persistently high and rising public debt and its implications • Increasing salience of post-materialist values other than economic development^a • Ecological limits to growth • Challenges in resource availability (fossil fuels, rare minerals, battery and solar components)
Science and technology as the fundamental driving force of progress; scientific approaches solve a growing number of problems and produce a more-general mastery of human and natural affairs	• Demonstrated limits to scientific rationalism and technocratic approaches in solving key social and international problems, from poverty to homelessness to crime • Recurring legitimacy challenges to scientific rationalism in specific crises (economic, organizational, social) • Rising skepticism of science and scientific institutions • Growing concern about risks of two leading technologies: AI and biotech • Some evidence that scientific progress has slowed, with new breakthroughs more focused on incremental and consumer-oriented products^b
A well-functioning marketplace of ideas in the public sphere that both advances shared objective understanding and forms the basis of democratic deliberation	• A fragmentation of sources of information ruins the coherence of the marketplace of ideas • Sources championing misinformation and disinformation corrupt the information environment, both from within societies and as strategically used by rivals from without • Agreed fact base of societies decays
Economic and social advances that generate shared experience of wealth and progress	• Rising levels of inequality within many societies (although declining between nations) • Rising expectation gaps based on anticipation of degree of shared wealth from industrial era • Thinning intermediary social institutions impair social cohesion and shared opportunity • Role of AI remains uncertain but could threaten significant numbers of careers
Continually expanding human autonomy, freedom, dignity, and social and political freedoms	• Democratic decline in parts of the world • Emergence of potentially enduring nondemocratic models able to compete in a new paradigm • Threats to stability of liberal democratic systems resulting from the above trends (populist nationalism) • Natural culminating point of secular trend toward freedom when forms of autonomy begin to conflict

Table 2—Continued

Characteristic of Scientific-Industrial-Bureaucratic Era	Current Trends and Risks
Economic and social value of networks of exchange, especially trade	• Costs of trade have become more salient than gains from trade; trade opening process on hold • In era of intensifying rivalry, national security considerations are constraining free exchange (especially in U.S.-China relations, but radiating out from there) • Another main network of exchange—people—also more constrained both because of political salience of immigration issues and national security fears • “Weaponized interdependence” increasing costs and risks of networks of exchange^c
Large bureaucratic-administrative entities both essential and effective	• Excessive growth of bureaucratic-administrative functions imposes significant efficiency penalty on public and private sector organizations alike • Popular loss of faith in such entities • Rising predatory arbitrariness of some institutions intensifying resentment and lack of faith
Military power as a function of technological sophistication and industrial might	• Information networks and very rapid sense-target-kill chains becoming the core military advantage • Defense industries becoming too constrained and individual systems too complex for mass production to have the sort of decisive effect during conflicts that it did in World War II • Information vulnerabilities becoming the most direct route to decisive short-term effects

SOURCE: Author analysis; the roster of trends is largely drawn from the topics addressed in the online annex.

^a Inglehart, *Cultural Evolution*.

^b Collison and Nielsen, “Science Is Getting Less Bang for Its Buck”; Hanlon, “The Golden Quarter”; Park, Leahey, and Funk, “Papers and Patents Are Becoming Less Disruptive over Time.”

^c Farrell and Newman, “Weaponized Interdependence.”

This is the core of the challenge to the scientific-bureaucratic-industrial age: Actual and perceived failures in the objective capacity and perceived legitimacy of mechanisms of self-healing—that is, the processes of governance—are reaching an inflection point. This inflection point represents an accumulating failure of late industrial institutions to engage in effective problem-solving in the common interest.⁵¹ As a 2023 *Washington Post* analysis put it, “Faced with big and challenging problems—climate, immigration, inequality, guns, debt and deficits—

government and politicians seem incapable of achieving consensus In more routine ways, the political system feeds frustration and discontent with its incapacity to respond to the public’s needs. There is little on the horizon to suggest solutions.”⁵²

This is admittedly a difficult claim to justify in truly measurable terms. One of the most-widely cited sets of indices on governance—the World Bank Worldwide Governance Indicators analysis, which includes measures of general government effectiveness, as well as measures

of corruption and transparency—does not show clear trends between 1996 and 2021 for a variety of developed and developing countries. The United States and some European countries show a modest decline in overall governance effectiveness, Japan and South Korea post some improvement, and measures of developing nations span the gamut from significant declines to persistent gains.⁵³ Many nations have the necessary bureaucratic-administrative capacity to manage basic operations of their society. When challenged in crises, such as the 2008 financial crisis or the 2020 coronavirus disease 2019 (COVID-19) pandemic, many countries saw state institutions respond rapidly and relatively effectively.

But there is still substantial evidence that both because of the demands on governance and an increasingly daunting set of challenges, differences in governing capacity—including reforms that enhance the efficiency and effectiveness of existing institutions—will constitute the essence of competitive advantage in the emerging paradigm. The next section refers to the demand side—the risks and threats of the emerging era that will place new stress on governing capacity. Our research also turned up significant evidence on the supply side: indications that existing governance mechanisms are losing their ability to effectively address the problems of the era. This evidence comes in several forms.

First, there is measurable evidence of the growing size and complexity (and costs in efficiency and effectiveness) of bureaucratic-administrative institutions. The first-phase study of the project cataloged some of the data on the growth of bureaucratic institutions and the costs in terms of efficiency, morale, and stagnation in problem-solving. One scholar referred to part of this trend as “the admin-

istrative state’s legitimacy crisis,” a situation in which citizens’ “expectations meet bitter disappointment; their governments seem to serve elites with political priorities divergent from their own; and there is a growing sense, evident even among insiders, that our institutions specialize in producing dysfunction and might well be replaced by something better.”⁵⁴ But the trend goes beyond the public sector, embracing the rise of managerial capitalism and the growth of energy-sapping administrative functions in private firms as well.

This trend is related to the idea of state capacity, but it is somewhat distinct. States can have significant structural capacity to address problems but might still be often prevented from doing so by bureaucratic inefficiencies or sclerosis. The issue is also distinct from the danger of paralyzed political action, which can result from polarization or other causes. Failures in governance are often political rather than bureaucratic failures,⁵⁵ and the measurable decline in the activity and effectiveness of legislatures in many advanced democracies is surely related to the challenge of lost legitimacy. But sclerotic bureaucratic-administrative states are a feature of the current era, and they have specific effects that can undermine competitive advantage. In the U.S. context, these include the following:

- Bureaucratic and regulatory complexity imposes immense unnecessary costs on public investments, especially infrastructure projects.⁵⁶
- Corruption and a lack of transparency in many countries is persistent. Transparency International’s 2022 index found either stagnation or decline in transparency measures, with only 8 of 180 countries improving their score.⁵⁷

- The growth of administrative functions results in rising costs of education, which has downstream effects on shared opportunity.
- The public and private sectors experience lower levels of experimentation and innovation.⁵⁸
- The private sector loses revenue and potential investment.⁵⁹
- Citizens' perception of effective governance and fair treatment is ruined,⁶⁰ a trend and risk that could accelerate with the broader use of algorithmic decisionmaking in bureaucratic settings. This could produce what two scholars have termed a "crisis of legitimacy" in administrative proceedings.⁶¹

A second source of evidence for a persistent and worsening decline in governance is perceptions. These can be misleading—partly guided by sensationalistic media treatments, citizens can hold extreme views about the quality of governance. Nonetheless, as the online annex documents, the perceived legitimacy of major institutions and measures of trust in government have declined in many countries, particularly the United States.⁶² The trend is not universal—in some Organization for Economic Cooperation and Development (OECD) countries, for example, trust in government to solve major problems remains robust. But there is a critical mass of countries where confidence in government is at or below 50 percent: the United States, Japan, France, Turkey, Peru, Chile, Brazil, and many others. Even in the OECD more broadly, trust in major political institutions, including political parties and national institutions, is generally lower.⁶³

This problem can be especially severe in advanced nations, which experience a classic crisis of rising expectations.⁶⁴ The demands of citizens have risen with the wealth

and sophistication of their societies and as governments have offered increasingly generous social safety nets, law enforcement processes, and crisis response capacities. These rising expectations can be transferred to anticipated effectiveness of bureaucracies.⁶⁵ The administrative state thus, over time, has a higher and higher bar to meet in performance if it is to sustain legitimacy—even as the practical potential for efficient management of large-scale enterprises reaches a culminating point.

A third threat to governance comes from rising socioeconomic inequality,⁶⁶ which undermines the perceived fairness of governance institutions. There is clear evidence of a growing sense among citizens that major governing institutions serve the interests of the wealthy and powerful and are increasingly inaccessible to average citizens. Some 70 percent of U.S. citizens believe that the U.S. economic system "unfairly favors the powerful."⁶⁷ In Europe, the percentage of people who believe that government is "run by a few big interests looking out for themselves" is low in a few countries—such as Sweden—but is over 60 percent in Germany, Spain, Portugal, the Czech Republic, and other countries and over 50 percent in Italy, Belgium, France, and elsewhere.⁶⁸ Similar attitudes have spurred the rise of populism in many developed nations.

Fourth, growing debt burdens in many countries are tightening a long-term limit on the capacity of governments to take new initiatives. This is true of China and the United States but also of such countries as Japan, the United Kingdom, Italy, Spain, and Portugal. Even more than some other inputs to a governance crisis, debt is an uneven factor, affecting some countries far less than others. But it will be especially relevant to some leading industrial countries in the decades ahead.

Fifth, the list of specific public policy challenges, in the United States and globally, that have become seemingly immune to public policy remedies appears to be growing. In Japan, successive governments have not been able to cure the long-term stagnation of the economy. In the United States, accumulating debt, entitlement reform, immigration reform, tax code reform, and a host of other issues resist fundamental change. In China, the government seems unwilling to tackle fundamental financial reforms and to move to a new growth model.

The result of these various challenges to the ability of steering mechanisms to solve problems is what Habermas terms a *legitimation crisis*. “A legitimation deficit means that it is not possible by administrative means to maintain or establish effective normative structures to the extent required.”⁶⁹ One implication is a failure to learn and adapt: “Organizational principles limit the capacity of a society to learn without losing its identity.” So “Steering problems can have crisis effects if (and only if) they cannot be resolved within the range of possibility that is circumscribed by the organizational principle of the society.”⁷⁰ That may be precisely what is happening today: The steering problems of the late industrial, postindustrial, or information age cannot be successfully addressed by the steering mechanisms left over from the industrial era.

These failings are especially dangerous because the quality of governance is a precondition for full realization of other sources of competitive advantage. Stagnant, calcified bureaucracies are holding back defense innovation and collaboration with allies and partners. Inability to produce a sustainable fiscal path hamstring investments in sources of advantage, including new technologies, infrastructure, and education. Private sector obsession with short-term

returns undermines productive investment. Improved problem-solving governance capabilities across the whole of society—creative, adaptable, effective, and legitimacy-conferring—are one key to unlocking many other forms of competitive advantage.

The Necessity of Effective Governance: Dealing with Threats and Crises

Challenges to many of the assumptions of the scientific-bureaucratic-industrial age pose serious threats to the effectiveness and legitimacy of current models of governance. But the centrality of governance to the emerging competitive paradigm is apparent for a second reason: the rise of serious threats to the security and well-being of homelands, from both natural and human-made causes. As noted by many trends in the online annex, the emerging era is likely to be punctuated by numerous economic, ecological, technological, and geopolitical crises. Anticipating and dealing with them effectively will constitute an essential foundation for national competitive advantage—and that will demand effective and legitimate governance to build resilience, anticipate problems, and respond to crises.

The emerging era is one in which multiple threats to homelands and citizenries will demand a generalized and comprehensive societal resilience.⁷¹ In the face of environmental and political stresses and crises and continuing external threats to homelands, nations will thrive in the new paradigm to the degree that they are resilient in multiple social, political, and economic ways. One aspect of this requirement is information resilience—in terms of not only information security but also citizenries that can navigate an era of fragmenting information sources.⁷²

A related source of risk is emerging in the form of the disruptive effects, as well as perils to humanity's future, embodied in emerging technologies. AI and biotechnology, in particular, offer tremendous potential in economic and social applications, but they also pose clear dangers to humanity in general and to the stability of individual societies. Nations that manage to renew their quality of governance will better safeguard themselves from the effects of these new fields.

Finally, the emerging competitive paradigm poses ever-present threats to global interdependencies. The persistent competitive advantages of participating in networks of exchange and the growing emphasis on self-sufficiency in a more fractious global environment demand a new balance between self-reliance and interdependence. This implication does not endorse autarky; being at the hub of critical networks is still a competitive advantage. It merely highlights the need to strike a somewhat different and more self-conscious balance between two sources of advantage: systemic power/networked centrality and integrated vulnerabilities.

The fundamental sources of this trend are the reality of continuing dependencies (for example, for resources and supply chain components) alongside growing international tensions and the tendency for nations to “weaponize interdependence.”⁷³ These tensions are, in part, a product of the intensifying U.S.-China rivalry and the resulting pressures for divisions in trade and technology blocs. Those pressures do not apply equally to all issue areas, and many globalized supply chains will remain largely immune from their effects. But, especially in leading technology areas, there will be a continual tendency for countries to have to choose between two broad networks—and a result-

AI and biotechnology offer tremendous potential in economic and social applications, but they also pose clear dangers to humanity and to the stability of individual societies.

ing need to promote competitive advantage in a context of competitive interdependence.⁷⁴ The challenge is not merely trade or technology security—it also embraces problems of the predatory capture of key industrial sectors; resource dependencies; and information flows, including postwar and cross-border flows of information more generally. Some of these dependencies pose “high, potentially unacceptable levels of risk” to national security whose interruption “would have an immediate and severe impact on critical functions” of the government or society, without “ready alternatives” being available.⁷⁵

One recent study described the resulting focus as “flow security.” It “refers to the need to manage the risks that come with flows between actors in a highly globalized, highly connected world—while simultaneously fostering

the opportunities of such flows.” As straightforward as that sounds, the report notes that an emphasis on flow security would represent a “monumental shift” in approaches to globalization, “a clear departure from unregulated market reform policies espoused by Western states in the second half of the twentieth century.”⁷⁶

In assessing a nation’s standing in this era, one key indicator of the potential for success will be an ability to mobilize national resources, will, and law on behalf of a shared effort to improve national competitive standing and, increasingly, to discover such problem-solving energy in nongovernmental institutions and processes, as well as active states.⁷⁷ The emerging paradigm demands anticipatory, coordinated, and decisive action—something that polarized democracies with troubled public spheres and sclerotic bureaucratic structures (in both the public and private sectors) will struggle to provide.

An important message of this analysis is that challenges to existing governance approaches are such that tweaking around the edges of current institutions and techniques will not be enough. Measures to address these challenges demand a wide variety of processes of social reform in challenging areas designed to modernize and relegitimize the basic social contract in a country rather than narrower, more-technocratic issue-specific reform.⁷⁸

The Role of Solidarity, Tradition, and Culture in Underwriting Competitive Advantage

As a natural consequence of these various trends, societal coherence and solidarity are likely to be key differentiators in competitive outcomes in this paradigm. Nations that

can preserve a stronger degree of social equilibrium and sense of shared identity (along with natural outcomes, such as a stronger degree of faith in public institutions) will gain significant competitive advantage over countries that are more alienated, fractured, unstable, and ultimately cynical and prone to conspiratorial thinking.

Solidarity, in turn, is typically grounded in some degree of national-cultural identity. Habermas stresses the importance of culture and tradition in sustaining social cohesion and shoring a society up against crises. A “rupture in tradition, through which the interpretive systems that guarantee identity lose their social integrative power, serves as an indicator of the collapse of social system.” A society loses its identity “as soon as later generations no longer recognize themselves within the once-constitutive tradition.”⁷⁹ Societies must produce meaning to serve their purposes and create a stable sense of being for their members. They offer “interpretations that overcome contingency”⁸⁰ and provide a basis for ontological security. But bureaucratic-administrative steering mechanisms do not produce such meaning,⁸¹ so they must earn legitimacy through performance. As Habermas puts it, the administrative functions of a society are burdened with the requirements of legitimation.⁸² Indeed, he argues that, as the scope of state activity grows, “the boundaries of the political system *via-a-vis* the cultural system shift as a result of this expansion,” which reduces the legitimating potential of culture and increases the burden on public action.⁸³

Effective and legitimate governance and cultural solidarity grounded in tradition are, therefore, closely interrelated with causal links going both ways. The emerging era might well reflect advantages for nations with

tradition-based cultural solidarity. The historian William McNeill argued that “A people without a full quiver of relevant agreed-upon statements, accepted in advance through education or less formalized acculturation, soon finds itself in deep trouble, for, in the absence of believable myths, coherent public action becomes very difficult to improvise or sustain.” Yet myths generate implied approaches to problem-solving that are tested by experience; when the gap between them widens, it is time for a new myth. The risk is that one will not emerge. “Discrediting old myths without finding new ones to replace them erodes the basis for common action that once bound those who believed into a public body, capable of acting together.”⁸⁴ It will be difficult for nations to succeed in a governance revolution without the cultural and tradition-based sinews of national identity.

The Competitive Advantage of the Governance Revolution

The basic upshot of these trends is clear. Competitive advantage in the emerging paradigm will critically depend—at least over the long term—on the quality and effectiveness of problem-solving institutions of governance in societies. This pattern would not be new. The peak competitive periods of many modern nations have often emerged during eras of bold, open-minded experimentation with governance institutions, models, and techniques—the multiple public sector responses to the Great Depression in the United States, China’s decades of flexible trial and error during its growth surge, earlier periods of governance experimentation in Great Britain during the Victorian Era and in Bismarck’s Prussia. But the

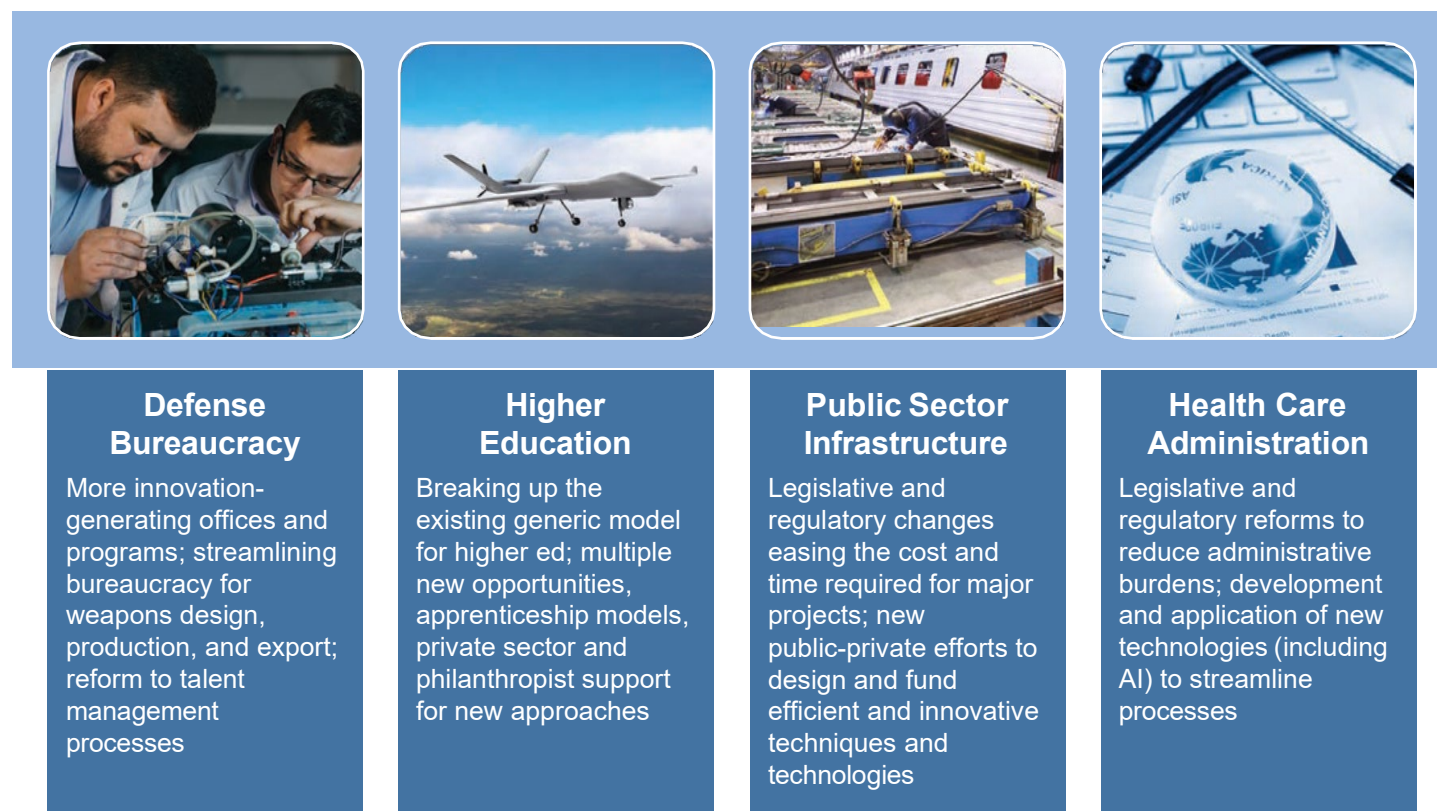
importance of this capability today is especially great, for the two reasons outlined above: the rising constraints on existing modes of governance and the emerging threats to homelands that demand effective responses.

The emerging era therefore represents a competition for advantage in high-quality governance. “Better government has been one of the West’s great advantages,” write Micklethwait and Woolridge. “Now the Chinese want that advantage back.” Developing nations are “beginning to produce some striking new ideas, eroding the West’s competitive advantage in the process.”⁸⁵ Countries like Singapore have sought national power by searching widely for best practices both at home and abroad. That habit and mindset will be critical in the emerging paradigm: Countries with a potent thirst for governance ideas, and a willingness to adapt when they find them, will have a tremendous leg up on those stuck in path-dependent habits that beget stagnation and calcification. This is the gravitational hub of the systemic competition with China—a competition over the performance, legitimacy, and resilience of distinct governing models.

A governance revolution could include a host of specific reforms or initiatives. The most obvious is widespread experimentation in institutional responses to public challenges—in such areas as health, education, or welfare—that bring together public, nonprofit, and private sector actors in new means of gaining progress (Figure 2 offers just a handful of examples). The goal is to generate transformative change in the governing institutions of various fields; again, marginal changes will not achieve the levels of problem-solving capacity and relegitimation required for measurable competitive advantage.

FIGURE 2

A Governance Revolution: Selected Examples



Such an agenda is likely to require a new era of business activism in solving social problems, such as some of the mid-century trends in the United States—as opposed to the more-recent, fragmented corporate self-interest documented by Mark Mizruchi.⁸⁶ It will require fresh ways of reforming existing bureaucratic-administrative institutions for greater flexibility and competence—in some cases,

radical reforms in personnel and tightened standards for rulemaking that accept higher degrees of individual risk in society. It will demand changes in various rules and, in some cases, voting processes to revive the capacities of legislatures to make consistent and meaningful policy. It will call, in some cases, for entirely new ways of managing

social risks or opportunities that go beyond the governance mechanisms we can conceive of today.⁸⁷

One of the implications of a governance revolution is to allow more space for a complex web of localized and national strategies for achieving similar goals. A major impetus of the scientific-bureaucratic-industrial era was a degree of homogenization: universally shared scientific understandings, similar goals under industrial modernity, similar bureaucratic-administrative structures, similar social structures and habits under a cosmopolitan global trend, and ultimately similar economic policies under the influence of international institutions and norms. The era of governance emerges, in part, from a growing understanding of the limits of homogenization as value or strategy. Its primary engine is experimentation, the proliferation of public and private governance approaches with performance-based legitimacy as the goal.

A governance paradigm does not assume any specific character of the emerging international system. It is a template for national success, not a description of world politics—any more than the societal, scientific, or industrial paradigms specified the nature of the international system at the time. Many trends are underway in world politics that parallel the developments in the paradigm—primarily, of course, an intensifying U.S.-China rivalry but also the rise of an important group of developed and developing countries not aligned with either. Nor does the paradigm itself speak to the risk of conflict: The incidence and risk of major system-shaping wars was high for a time during the industrial age, then declined significantly under the influence of nuclear weapons and democratic globalization. It might be rising again today, but that is a distinct question from the nature of the competitive paradigm.

In the broadest sense, this paradigm implies a need to update and rethink the nature of the social contract on offer during the industrial era. A singular emphasis on economic growth, technological progress, and higher standards of living and guarantees against risk are not sustainable in a financial or political sense. “The crisis of the state is more than an organizational crisis,” Micklethwait and Woolridge argue in *The Fourth Revolution*. “It is a crisis of ideas. The social contract between the state and the individual needs to be scrutinized in much the same spirit that Hobbes and Mill reexamined it.”⁸⁸ Such a rethinking of the core social contract of the new era will ultimately call for hard choices on significant, and controversial, issues—such as society’s risk tolerance in terms of personal safety and the ways in which regulatory structures impose outcomes that are perceived to be fair.

The emerging era will then generate new trends of its own. In his magisterial history of the 19th century, *The Transformation of the World*, Jürgen Osterhammel identifies what he saw as the “five characteristics of the century.”⁸⁹ These included such factors as “asymmetric efficiency growth,” mobility of people and ideas, a “tension between equality and hierarchy,” and emancipation. Osterhammel uses almost one thousand captivating pages to arrive at these simple but telling points about a historical era. Based on this far briefer survey of the future, the trends and themes of an age of governance revolution might generate their own main characteristics.

Future historians writing on the era that will mature through the next half century to make a similar list might identify the following characteristics of the governance revolution. It is likely to be a period of

- *asymmetric enactment of transformative governance models*, both in state and nongovernmental institutions, leading to differential degrees of competitive advantage in various domains, from education to technology to public health
- *intense debates over the scope and nature of the authority of various social actors*, featuring renewed arguments about public versus private responsibilities—debates whose outcomes will have significant implications for a nations’ problem-solving capacities
- *proof—or absence—of the ability of governance structures to control leading technologies, such as AI and biotechnology*, in ways that both grant competitive advantage to some nations and create opportunity and peril for all
- *highly uneven crisis response during a period of extreme events*, grounded in the governance capacities and inherent societal resilience of nations, which will create more differences in levels of national performance over time
- *struggles to mitigate the embedding of polarized politics and corrupted information environments* in all societies, including great powers, with varying levels of success conferring competitive advantage or penalty.

Lessons for U.S. Competitive Positioning

Our findings about the potential character of the emerging competitive paradigm suggest several lessons for U.S. national security strategy.

Many of the essential requirements for national competitive success in the emerging paradigm continue key themes from the industrial era. As noted above, competitive paradigms overlap with one another. In every historical case reviewed for this analysis, major components of competitive advantage from one paradigm persist into the next. In the current case, this means that core competitive advantages relative to the late industrial era—notably, large-scale manufacturing capacity, scientific and technological sophistication (including research, skilled labor, and entrepreneurial applications), effective large-scale social institutions, and more—will be essential building blocks of competitive advantage. An age of governance is still built on the essential economic, social, and political foundations of the scientific-bureaucratic-industrial era.

The seven characteristics identified in the first-phase study on societal determinants of competitive standing remain the essential basis for success in the emerging paradigm. The same essential societal characteristics continue to be critically important to master the themes of the emerging competitive paradigm, and aspects of the emerging paradigm challenge these characteristics in new ways. Focused national ambition and will are essential to fuel the investments and reforms needed for competitive advantage. National disunity and fragmentation strike directly at the ability to fulfill many essential demands of the new era. Shared opportunity, effective institutions, and diversity and pluralism can all continue to magnify the effects of competitive advantages. And the two final characteristics—a learning and adapting mindset and the productive initiatives of an active state—are arguably even more critical in the emerging era than they were in the last one.

Innovating in and applying for value-producing emerging technologies, especially AI, biotechnology, and renewable energy technologies, remain essential to competitive success in the emerging era.⁹⁰ The emerging paradigm will be grounded in the productive application of an interrelated set of emerging technologies (including AI, thick infospheres, advanced manufacturing, and biotech) as the foundation for industrial dynamism, military strength, and social efficiency. Every area of social life—including education, health, public safety, urban planning, and the operation of social services—will be deeply affected by these technologies. AI capabilities will play central roles in medical diagnoses, searches for essential data and knowledge, design of anti-crime campaigns, and hundreds of other social choices and plans. Nations that lag badly behind in the development and application of these technologies will be at a significant competitive disadvantage.

Yet the trends surveyed for this analysis do not support a simplistic claim that the emerging era is *the* AI (or biotech or information) age. We have suggested that the structures of governance that provide the supportive context for technology development (and many other competitive requirements) represent the most essential foundation for national success. Nonetheless, each competitive paradigm is defined to an important degree by the leading technologies of the time, and the emerging era is no different. AI, in particular, offers the potential for applications in dozens of critical economic and social fields; nations that cannot keep pace with its development and applications might fall behind in broader competitive terms just as surely as those who failed to modernize fell behind in the industrial era.

An inability to fashion a renewed and revalidated social contract, in the form of reformed and creative approaches to governance, could well be the most significant risk to the United States' ability to thrive in **the emerging competitive paradigm**. The United States retains tremendous residual strength in the emerging model for value creation: Its vibrant, internationally networked private sector can, with sufficient government support and international collaboration, hold even with or outcompete a surging China in these fields. But trends in faith in public institutions, perceptions of shared opportunity and fairness, and other issues related to a legitimate social contract could pose a greater long-term threat to U.S. competitive standing. Many of the most powerful trends in the emerging era—rising inequality, political polarization, rising alienation, growing threats to homelands, anger at predatory bureaucracies—directly challenge nations'

The trends surveyed for this analysis do not support a simplistic claim that the emerging era is *the* AI (or biotech or information) age.

ability to sustain viable social contracts. Major areas of concern tend to relate to negative social and political trends in key areas related to the criteria for success: the state of U.S. governing institutions, faith in social institutions more broadly, intensifying political and social polarization, rising domestic extremism and its offshoots (such as threat of domestic violence), the corruption of the national information environment, and lagging progress in education and building a skilled workforce.⁹¹ These are more-difficult barriers to overcome than lagging performance in key industries or technologies.

The most critical form of response from the United States, then, would take the form of widespread reforms of existing governance institutions. These could include changes in procedures and norms in legislatures to enhance their effectiveness, deep reform of federal bureaucracies, or new experiments in decentralized governance. In defense and domestic policy alike, starting anew and rethinking governance structures from the ground up—as politically and practically difficult as it would be—constitutes the indispensable basis for renewed competitive advantage.

The era thus reflects a larger insight that the social structures of nations—their arrangement of economic and political power and social hierarchies—compose one of the most important foundations of competitive advantage. This conclusion partly mirrors Carl von Clausewitz's emphasis on the sociological basis of military power. He looked in awe at the energies released by the French revolution, which created a situation in which "a people of thirty millions" were now unified in a national endeavor so that "War, untrammelled by any conventional restraints, had broken loose in all its elemental fury."⁹² The result,

as one scholar has put it, was that "The French revolution unleashed new energies which found their expression in a revolutionary form of warfare": fully mobilized populations spurred by nationalist fervor, molded into highly trained, fast-moving strike forces capable of being wielded in new ways by a leader of genius.⁹³ In a similar but arguably even more fundamental sense, the social structures of the United States and China will produce competitive benefits and costs as they struggle for relative influence over the international system.

If the United States falls short of the demands of the emerging competitive paradigm, it might not do so for reasons parallel to Great Britain's relative decline in the 20th century, which stemmed from an inability to keep up with second-phase industrial manufacturing and leading technologies. What imperils U.S. competitive standing most could be fractures in its social fabric, its political coherence and effectiveness, the health of its information environment—and, as a product of all these factors, poor decisionmaking on major challenges.

The United States confronts a challenging historical tendency: Leading nations very often cannot adapt sufficiently to the demands of new competitive paradigms. As noted at the beginning of this report, many more leading nations fail to realign themselves to the demands of a new paradigm than succeed at that difficult task. Even Britain, which rode the first Industrial Revolution to global hegemony, ultimately could not continue to adjust itself to the second Industrial Revolution and fell behind the United States, Germany, and others in competitive standing in key industries and its industrial output. Like Japan, it entered a long, slow decline in competitiveness, reflecting a trend that came to be known as the *British disease*. If the United

States is to recast itself to succeed in the emerging era, it will, to some extent, be seeking to violate a well-established historical tendency.

The emerging paradigm might offer less competitive advantage to fully open societies, either politically or economically. Although it appeared, for a time, that centrally planned societies would be able to compete in industrial terms with the United States, the West, and Japan, societies that were politically and economically more open and market based eventually proved to have significant advantages. The argument from early in the Cold War was that Western democratic systems were destined to prevail, in part, because of their inherent, bottom-up, grassroots dynamism, which offered economic and technological benefits and a form of legitimacy that the centrally constricted Soviet system could never match. One could argue that politically constrained societies could make rapid progress (as, for example, South Korea did even before its democratization) and that a strong government role in state-led development was a boon to growth rather than a hindrance. China may properly be seen as a variant of these mixed models rather than a comprehensively state-directed system, which partly explains its own astonishing growth. Nonetheless, many analysts have held that eventually, high-growth, highly developed societies are incompatible with strict political control and a massive state role in the economy.

Yet the emerging competitive paradigm might further qualify the advantages of open political and economic systems. In the emerging paradigm, it could be that nations do not need democracy or truly free markets to succeed. What they do need is the following:⁹⁴

- access to international networks of goods, ideas, and people
- a system capable of generating pockets of experimentation and innovation, at least partially unconstrained by any central guidance
- a research, educational, and information context supportive of ongoing responsiveness to innovation and resilience
- effective and transparent governing institutions—both formal public sector departments and agencies and more informal social institutions
- investment capital to promote new technologies and capabilities and an overall context with sufficient private sector flexibility.

Measured in these terms, the existing Chinese system certainly appears to have greater potential to compete effectively than the Soviet Union in the industrial and postindustrial paradigms. (This conclusion builds on a long-standing contention—by Beijing and others—that China’s development model reflects a distinct approach that marries a flexible and adaptable form of state control with a large, innovative market,⁹⁵ although the argument here is more specific to the nature of the emerging era.) AI technologies, combined with highly efficient manufacturing, can perhaps substitute—in terms of long-term growth and productivity—for some of the effects of dynamic market economies. Applications of AI could theoretically out-think grassroots experimentation in dealing with social challenges—much as AI programs have repeatedly out-thought human competitors in such games as chess, poker, and multiplayer video games. A stronger state role might be better able to provide resilience and sustainability

and to impose major reforms to deal with inequality and social alienation.⁹⁶

Beijing is certainly trying to use AI, control of its information environment, and surveillance technologies—along with massive state investment in critical technology sectors—to create a controlled, almost algorithmic model of societal success.⁹⁷ It faces multiple challenges, but, at least in theory, the emerging paradigm does allow for such an approach to outperform open societies, especially ones gripped with significant social, political, and informational volatility.

A related competitive handicap for the United States could be that many of the security aspects of the emerging paradigm emphasize areas of technology that are mainly in the private sector. Yet private firms often behave in ways that place profits ahead of national interests: in locating manufacturing for critical technologies abroad, seeking to escape paying taxes into their home country's treasury, or (in the case of social media platforms) prioritizing usage over combatting misinformation. China, on the other hand, has demonstrated a willingness to bend quasi-private firms to its will.

Despite the potential for a nondemocratic route to success, the specific approach of the Chinese Communist Party (CCP) could impede its competitive position in the emerging era. Certain elements of the emerging competitive paradigm, therefore, at least open the possibility that well-functioning autocracies displaying effective rule, strong social solidarity and legitimacy, potent investment in key emerging technologies, and strong international partnerships to fuel development could pose a competitive challenge more lasting and robust than the Soviet Union in the Cold War. Yet it is not clear if the current trajectory

of Beijing's approach to domestic rule or international relations will meet these criteria.

For one thing, China is just as much in the crosshairs of an era of governance as the United States or any other modern power. Key sources of competitive risk associated with this theme—sclerotic bureaucratic-administrative institutions, loss of faith in the future, rising inequality, and perception of rule by a self-interested few, and more—threaten the CCP's model and the U.S. one. China, after all, is seeking a highly technocratic version of a scientific-bureaucratic-industrial society—indeed, one grounded in a basic philosophy, Marxism-Leninism, which is a fundamentally scientific-modernist theory of social life. China could retain a stronger unifying myth and emphasis on traditions and share sociocultural values, but these efforts also might be brittle, because the values connected to the current regime rely on the continued legitimacy of the CCP, which cannot be taken for granted.

The CCP system might, therefore, be no better positioned in its inherent characteristics to flourish in a paradigm emphasizing the necessity for effective and legitimate governance. China is investing massively in new technologies, for example, but its efforts to impose central direction on these immense programs could both fail and prove unable to nourish bottom-up innovation ecosystems.⁹⁸ It could face irresolvable dilemmas in continuing to generate the levels of economic growth that have been essential to the legitimacy of the CCP.⁹⁹

Its policy choices might also be creating competitive disadvantage in the emerging paradigm. On its current trajectory, leadership in Beijing could be veering from a sustainable version of a statist model for competitive success into an embrace of patterns and habits that will

undermine its dynamism and relative standing. The domestic push toward recentralization and imposition of a new orthodoxy based on Xi Jinping thought is likely to injure the society's ability to innovate and grow and could create strains within the society over the medium term. Its confrontational brand of nationalism is already limiting China's access to foreign ideas, people, private sector partnerships, technology, and capital. Its belligerence on several geopolitical issues and repeated efforts to coerce others into its preferred behavior has damaged its reputation in many countries and is producing a strong balancing effect in security and economic domains.

These patterns could, in fact, reflect an inherent flaw in nondemocratic systems whose sources of legitimacy stem from ideology, nationalist narratives, and provision of material advances rather than participation, a degree of openness, and some degree of popular representation. Autocracies might inexorably slide into such constrained and confrontational patterns of behavior—a sort of “autocracy spiral”¹⁰⁰—at least when they are unable to offer endless economic growth and foreign expansion as ongoing legitimation tools. If this is true (and, separately, if China continues to tighten political control, impose more-restrictive orthodoxies, limit foreign contacts, and generate intensifying global pushback), then China will deny itself the route to competitive success that is theoretically open to it.

Conclusions

We have argued that the emerging paradigm that will help determine competitive advantage is best understood as a governance revolution. Nations will gain competitive

advantage when they can build society-wide steering mechanisms, both public and private, that perform effective problem-solving and do so while preserving fiscal sustainability and acting in the name of shared sociocultural traditions. Given the limits to bureaucratic technocracy, the most likely avenue to such an outcome is not through universal programs but rather—as the first-phase study of this project suggested—through a portfolio of experiments providing numerous options suitable to different contexts.¹⁰¹

If the emerging era indeed represents a competition in governance mechanisms, unlike in the Cold War, the United States might not be able to count on its inherent social energy to prevail this time. China has a conceivable pathway to success in the emerging competitive paradigm in ways that the Soviet Union never did.

Unlike some other great powers during transitions in eras, the United States is not fatally misaligned to the requirements of the emerging competitive paradigm. It is not the late Ottoman Empire or the later Soviet Union, with inherent social, political, and economic characteristics that almost guaranteed failure in sustained competitive advantage against the leading powers of the day. Given that the era continues to reflect many aspects of the industrial era, this ought to come as no surprise. But a persistent narrative of U.S. decline and Chinese overtaking has perhaps camouflaged the incredible residual strengths the United States has accumulated, such as continued leading position in many technology areas and effective governing institutions at multiple levels (state, federal, municipal, and local).

The biggest question, however—as we stressed in our first-phase study—is not whether the United States has the raw materials to thrive in the emerging paradigm but whether intensifying and interlinked economic, political,

The degree to which the United States aligns itself to an age of a governance revolution will play a major role in making the difference in which future the United States confronts.

and social problems will keep it from making the necessary choices to do so. If the United States failed to adjust to the demands of a new era, it would not be the first global hegemon to be defeated by such a transition. Hobsbawm has described Britain's slow decline during the mid to late industrial era from an unprecedented position dominating the world economy to a laggard in key economic, social, and military terms. Britain was not able to adjust to the second, more mass manufacturing— and science-oriented Industrial Revolution and ultimately could not keep up with industrial-era powerhouses like the United States and

Germany. This represented “the sudden transformation of the leading and most dynamic industrial economy into the most sluggish and conservative, in the short space of thirty to forty years” (roughly 1860 to 1900).¹⁰²

Britain, Hobsbawm argued, “failed to adapt to new conditions, not because she could not, but because she did not wish to. The question is, why not?” Part of the explanation came from hubris: “A nation which is already at the top politically and economically,” Hobsbawm argued, “and tends to look down on the rest of the world with self-satisfaction and a little contempt, inevitably does” lose “certain non-economic spurs to enterprise.” He continued:

Americans and Germans might dream of making their destiny manifest; the British knew that it had manifested itself already. There is no doubt, for instance, that a nationalist desire to catch up with the British was largely responsible for the systematic German reinforcement of industry by scientific research: The Germans said so.¹⁰³

That lack of national motivation expressed itself, in part, in a shift from making world-leading goods to making money. “The British economy as a whole tended to retreat from industry into trade and finance, where our services reinforced our actual and future competitors, but made very satisfactory profits.” Britain, he argues, “was becoming a parasitic rather than a competitive economy, living off the remains of world monopoly, the underdeveloped world, her past accumulations of wealth and the advance of her rivals.”¹⁰⁴

Our analysis does not suggest that the United States stands on the precipice of a similar decline from world economic leadership. It benefits from powerful embedded strengths—the size of its economy, its ability to attract capital and skilled immigrants—and stands in a very different competitive position relative to the emerging paradigm. The United States’ choice is likely not between predominance and rapid decline but rather between a very modest but lasting degree of slight relative advantage and a world in which China’s status as first among equals becomes more undeniable, and the legitimacy and appeal of the U.S. model declines more rapidly. The degree to which the United States aligns itself to an age of a governance revolution will play a major role in making the difference in which future the United States confronts.

Notes

¹ For the first phase of the study, see Mazarr, *The Societal Foundations of National Competitiveness*.

² The term *paradigm* is sometimes more narrowly associated with the prevailing modes of thought in a specific field, but it has broader meanings as well. With its use here, we mean to suggest the dominant pattern of economic, technological, social, and political sources of growth, dynamism, and advantage at any moment in history—the model of national qualities associated with success. We discuss these concepts in more detail.

³ Mazarr, *The Societal Foundations of National Competitiveness*, p. 312.

⁴ Mazarr, *The Societal Foundations of National Competitiveness*, p. 313. Japan scholar Carol Gluck suggests a very similar idea in her concept of the “available modern” (Gluck, *Japan’s Modern Myths*, pp. 26–30) or the global model for state success on offer to aspiring great powers. That paradigm in the 20th century, she argues, came to be defined by the nation-state, industrialization, and global webs of commerce and ideas. Leaders of Meiji Japan recognized this emerging model—and the gaps between their society and its demands—and sought to make Japan more competitive within this modern paradigm. For a recent argument about Meiji Japan’s pursuit of the available modern, see Vries, *Averting a Great Divergence*.

⁵ Mazarr, *The Societal Foundations of National Competitiveness*, p. 311.

⁶ A related question is whether great powers make the times—whether they shape the character of the prevailing paradigm through their actions. This is true to a degree, but our research suggests that the more important influence relationship runs the other way—nations’ prospects being determined by the demands of their era.

⁷ Hobsbawm, *Industry and Empire*, p. xi.

⁸ Kennedy, *The Rise and Fall of the Great Powers*, pp. 148–149. As Kennedy notes, however (p. 152), while Britain remained the world’s leading maritime power, it never made the decisions necessary to translate this massive economic advantage directly into military power—in the way that, for example, Nazi Germany would later (or that would be true, for different reasons, for the United States after 1989). Britain’s economic predominance therefore did not translate into equivalent military superiority.

⁹ Ikenberry, “The Triumph of Broken Promises.”

¹⁰ Some would argue that such a period—half a century or less—is too brief. Previous historical eras that came to reflect a competitive paradigm lasted from over a century (in the case of the industrial age) to a millennium or more (in the ancient world). Yet we believe that considering developments over the next three decades makes sense for three reasons. First, objective indicators suggest that the pace of history’s march through distinct eras is accelerating and that a smaller slice of time can represent a significant transformation in the competitive demands on societies (see, for example, Butler, “Tomorrow’s World”; and Azhar, *The Exponential Age*). Partly, this is a perceptual issue based on compressed eras caused by cultural change (Perreault, “The Pace of Cultural Evolution”). Second, our research has identified trends and developments currently underway that are already creating powerful competitive demands and that are likely to mature over the next several decades. Third, no periodization can be definitive or absolute—competitive ages always blur into one another—and our purpose is to offer a snapshot of emerging demands that can inform U.S. thinking about international rivalries. In fact, the emergence of a new paradigm is already underway and has been for some time, so that the period ultimately assigned to this era could stretch well beyond a half century.

¹¹ The basic insight of Michael Porter’s work remains relevant in the advantage conferred by what he termed *cluster activities* (Porter, *The Competitive Advantage of Nations*).

¹² This is the approach taken in Thomas Kuhn’s famous work about changes in scientific paradigms of understanding (Kuhn, *The Structure of Scientific Revolutions*). Even Kuhn, however, includes other aspects of shared practice and professional institutions in his concept: An accepted way of understanding the world radiates outward into habits of research, organization, and institutional rules and norms that govern the life of professional fields from law to science.

¹³ Smith quoted in Barker, *Paradigms*, p. 31.

¹⁴ Barker, *Paradigms*, p. 32.

¹⁵ Barker, *Paradigms*, p. 37.

¹⁶ Barker, *Paradigms*, p. 51.

¹⁷ Hundley, *Past Revolutions, Future Transformations*.

¹⁸ Abramovitz, “The Elements of Social Capability,” p. 29.

¹⁹ Toynbee, *A Study of History*, pp. 152, 140.

²⁰ We are grateful to Wouter Jurgens, at a meeting of The Hague Center for Strategic Studies kindly organized by Tim Sweijts, for the specific framing and term of *social contract* to capture the essence of what we meant to convey with this half of the strategic paradigm.

²¹ For recent examinations of the shifting landscape for modern social contracts, see Shafik, “A New Social Contract.”

²² For evidence of the negative effects on economic growth, see Butkiewicz and Yanikkaya, “The Impact of Sociopolitical Instability on Economic Growth”; and Alesina et al., “Political Instability and Economic Growth.” For evidence of the negative effects on the pace of innovation, see Allard, Martinez, and Williams, “Political Instability, Pro-Business Market Reforms and Their Impacts on National Systems of Innovation.”

²³ Maddison, *The World Economy: A Millennial Perspective*.

²⁴ A superb chronicle of this period is Vries, *Averting a Great Divergence*.

²⁵ Berkeley Economic Review, “The Japanese Economic Miracle.”

²⁶ See, for example, Vogel, *Japan as Number One*.

²⁷ Crawford, “Reinterpreting the Japanese Economic Miracle.”

²⁸ Toh, “Living Standards Are Still Falling in Japan. That’s a Recipe for More Stagnation.”

²⁹ Shapin, *The Scientific Revolution*; Wootton, *The Invention of Science*; Lehmann-Hasemeyer, Prettnner, and Tschuschner, “The Scientific Revolution and Its Role in the Transition to Sustained Economic Growth.”

³⁰ Mokyr, *The Lever of Riches*; Deane, *The First Industrial Revolution*; Scott, *How the Old World Ended* (especially pp. 27–43).

³¹ In military terms, various scholars have periodized major epochs in different ways. One of the most basic, and helpful, is Trevor Dupuy’s division of military history into several overlapping eras: an “age of muscle” running through about 1500; “the age of gunpowder” from about 1400 through 1815; and “the age of technological change” beginning in 1800 and running through the present day, involving all the major industrial era technologies of the time and postwar computer and nuclear technologies (Dupuy, *The Evolution of Weapons and Warfare*). One of Dupuy’s key messages was that the pace of advance had increased over time. The age of technological change involved far more individual advances in weaponry, tactics, and military organization than all the others. He also stressed the importance of ideas as opposed to technologies: “The application of sound, imaginative thinking to

existing weapons has caused the great developments in military affairs and influenced international relations.” He continues, “The importance of new or imaginative ideas in military affairs—as opposed simply to new things—can best be gauged by the fact that new ideas have often permitted inferior military forces to overcome forces that were larger and/or better equipped” (Dupuy, *The Evolution of Weapons and Warfare*, p. 316).

Bernard and Fawn Brodie quickly survey forms of warfare in antiquity and the Middle Ages and then describe a phase of the “impact of gunpowder”; the rise of scientific applications to war in the 17th century; 18th-century Napoleonic techniques and capabilities; and the effect of 19th-century science on war, nuclear war, and postwar technological advances (Brodie and Brodie, *From Crossbow to H-Bomb*). Martin van Creveld refers to “the age of tools” spanning ancient times to about 1500 and involving mostly handheld implements but also the earliest gunpower weapons; “the age of machines” from 1500 to 1830 with the first widespread use of steam power and gunpowder weapons; “the age of systems” from 1830 to 1945, in which mass mobilization, true combined-arms warfare, and aircraft were introduced; and “the age of automation” from 1945 to the 1980s (Van Creveld, *Technology and War: From 2000 B.C. to the Present*).

³² Micklethwait and Woolridge, *The Fourth Revolution*, pp. 228–229.

³³ Kennedy, *The Rise and Fall of the Great Powers*, p. 369.

³⁴ Bhutata, “The U.S. Share of the Global Economy over Time.”

³⁵ One defining work on this subject is Castells, *The Information Age: End of Millennium*. See, also, Gompert, “National Security in the Information Age.”

³⁶ Mau and Drobyshvskaya, “Modernization and the Russian Economy.”

³⁷ Frankel and Orszag, “Retrospective on American Economic Policy in the 1990s.”

³⁸ DeLong, “What Went Right in the 1990s?”

³⁹ Jorgenson et al., “Raising the Speed Limit”; Oliner and Sichel, “The Resurgence of Growth in the Late 1990s.”

⁴⁰ These were National Intelligence Council, *Global Trends 2040*. Notable among the previous versions of the same report are National Intelligence Council, *Global Trends 2030*; National Intelligence Council, *Global Trends*. See, also, Brilliant, “10 Trends in 2022: Global Perspec-

tives for Business”; World Economic Forum, *The Global Risks Report 2022*; Army Futures Command, *Future Operational Environment*; Joint Chiefs of Staff, *Joint Operating Environment 2035*; Becker, “Joint Operating Environment 2040”; and United Kingdom Ministry of Defence, *Strategic Trends Programme*.

⁴¹ These sources are referenced in the online annex in the more detailed discussion of the trends.

⁴² The online annex offers detailed evidence and sources that support this characterization of trends. Three of these trends—growing inequality, a perception of elite rule, and increasing polarization—were extensively documented in Chapter 10 of the first-phase study and are not treated again in the online annex.

⁴³ See Besley and Persson, “The Origins of State Capacity”; and Cingolani, “The State of State Capacity.”

⁴⁴ Micklethwait and Woolridge, *The Fourth Revolution*, pp. 5, 14.

⁴⁵ For a useful introduction to and history of the term, see Bevir, “Governance.”

⁴⁶ United Nations Human Rights Office of the High Commissioner, “About Good Governance.”

⁴⁷ These criteria overlap with, but are not equivalent to, the concept of *good governance* (primarily a set of standards for the use of state capacity that refers to transparent and effective use of public resources in the common interest). The focus here is on the general practice of governance across social actors.

⁴⁸ For useful examples that cataloge these themes, see Antonio, “After Postmodernism”; Berger and Luckman, *Modernity, Pluralism, and the Crisis of Meaning*; Berger, *The Desecularization of the World*; Giddens, *The Consequences of Modernity*; Giddens, *Runaway World*; Inglehart, *Modernization and Postmodernization*; Löwy and Sayre, *Romanticism Against the Tide of Modernity*; and Thiele, “Twilight of Modernity.”

⁴⁹ The idea of challenges to the characteristics of modern, industrial life is certainly not new—it has arguably been the leading thread of socioeconomic and political criticism over the last half century. From this immense literature, some of the more general and philosophical treatments include Giddens, *Modernity and Self-Identity*; Himmelfarb, *Past and Present*; Smith, *Modernity and Its Discontents*; Toulmin, *Cosmopolis*; Rosa, *Social Acceleration*; Bauman, *Liquid Modernity*; Bauman, *Postmodernity and Its Discontents*. Peter Turchin’s theory of societal collapse focuses explicitly on social and bureaucratic complexity and

its role in creating ever-escalating energy demands that exhaust the resources of societies (see Turchin, *Historical Dynamics*).

⁵⁰ Habermas, *Legitimation Crisis*, pp. 1–5.

⁵¹ Acemoglu, “The End of Democratic Capitalism?”

⁵² Balz and Morse, “American Democracy Is Cracking. These Forces Help Explain Why.”

⁵³ World Bank, “DataBank.”

⁵⁴ Wallach, “The Administrative State’s Legitimacy Crisis,” p. 1.

⁵⁵ Meier et al., “Bureaucracy and the Failure of Politics.”

⁵⁶ Demsas, “Why Does It Cost So Much to Build Things in America?”

⁵⁷ Transparency International, *Corruption Perceptions Index 2022*.

⁵⁸ Lofgren, McNamara, and Modigliani, *Commission on Defense Innovation Adoption*.

⁵⁹ Hamel and Zanini, “Excess Management Is Costing the U.S. \$3 Trillion per Year.”

⁶⁰ Neal, “How Bad Bureaucracy Sabotages Democracy.”

⁶¹ Calo and Citron, “The Automated Administrative State.”

⁶² Saad, “Historically Low Faith in U.S. Institutions Continues.”

⁶³ The world numbers come from Gallup data reported in Balz and Morse, “American Democracy Is Cracking. These Forces Help Explain Why.” OECD data is from OECD, “Trust in Government.”

⁶⁴ For a description of the phenomenon, see Chandra and Williams, “The ‘Revolution of Rising Expectations,’ Relative Deprivation, and the Urban Social Disorders of the 1960s.”

⁶⁵ Researchers have long made this connection in developing contexts; rising expectations are connected to the perceived effectiveness of development administration. See, for example, Ilchman, “Review.”

⁶⁶ Habermas emphasizes that divisions in class structure are a critical part of any legitimization deficit (see Habermas, *Legitimation Crisis*, p. 73). He worries, too (p. 39), that advanced societies fragment social action among so many groups that class consciousness in broader terms can no longer arise, a serious obstacle to decisive pressure for change.

⁶⁷ Igielnik, “70% of Americans Say U.S. Economic System Unfairly Favors the Powerful.”

⁶⁸ Transparency International, “Global Corruption Barometer EU.”

⁶⁹ Habermas, *Legitimation Crisis*, pp. 46–47.

⁷⁰ Habermas, *Legitimation Crisis*, p. 7.

⁷¹ The 2022 U.S. National Defense Strategy prominently features the requirement for resilience as a component of deterrence (U.S. Department of Defense, 2022 *National Defense Strategy*). The French National Strategic Review of the same year also emphasizes the role of a resilient autonomy as the foundation of national security; the document notes that a key goal for France is “the long-term maintenance of its autonomy of decision and sovereign action in the face of all the threats that arise.” The “strengthening of our strategic autonomy” is the first of its national security pillars. “Strategic autonomy is the sine qua non condition for the protection of our fundamental interests. At its core are the capacities for autonomous assessment, decisionmaking and action” (French Republic, *National Strategic Review 2022*, pp. 19–20).

⁷² Gross, “How Finland Is Teaching a Generation to Spot Misinformation.”

⁷³ Farrell and Newman, “Weaponized Interdependence.”

⁷⁴ For one recent estimate of the efficiency price tag of such a shift, see Giles, “‘Friendshoring’ Is a Risk to Growth and Financial Stability, Warns IMF.” The International Monetary Fund (IMF) study cited there estimated a long-term cost of 2 percent of global output from a strong move away from globalized integration.

⁷⁵ Verhagen, Chavannes, and Bekkers, *Flow Security in the Information Age*, p. 35.

⁷⁶ Verhagen, Chavannes, and Bekkers, *Flow Security in the Information Age*, pp. 7–8.

⁷⁷ Our RAND colleague King Mallory offered critical input to this point.

⁷⁸ One set of scholars considering the implications of slower economic growth, for example, suggested that the necessary response must involve a process of “guided civic renewal,” with the involvement of active states in shaping a future with stronger democratic institutions, improved social integration and tempered inequality, better education, and more robust returns on public and private investment. Burgess et al., “Prepare Developed Democracies for Long-Run Economic Slowdowns,” pp. 1615–1618.

⁷⁹ Habermas, *Legitimation Crisis*, p. 4.

- ⁸⁰ Habermas, *Legitimation Crisis*, p. 119.
- ⁸¹ Habermas, *Legitimation Crisis*, p. 70.
- ⁸² Habermas, *Legitimation Crisis*, p. 36.
- ⁸³ Habermas, *Legitimation Crisis*, p. 71.
- ⁸⁴ McNeill, “The Care and Repair of Public Myth.”
- ⁸⁵ Micklethwait and Woolridge, *The Fourth Revolution*, pp. 1, 17.
- ⁸⁶ Mizruchi, *The Fracturing of the American Corporate Elite*.
- ⁸⁷ In the process, a governance revolution would take aim at an important source of the productivity slowdown in advanced economies in recent decades. The economist William Baumol argued in the 1960s that “productivity increases much more slowly in labor-intensive industries than in industries where capital in the form of machinery can be substituted for labor.” Public sector governance tends to be dominantly concerned with labor-intensive industries, such as education and health care, whose productivity has been stuck. The economist Larry Summers noted that if U.S. incomes are measured against manufactured goods, such as a television, they have grown tenfold. But incomes have fallen relative to the growing costs of health care. Nations held down by the anchor of low productivity and efficiency gains in labor-intensive sectors will be at a significant competitive disadvantage, especially because services have become the dominant components of advanced economies and many advanced nations are reaching the natural limits of added productivity in manufacturing. A governance revolution would be aimed primarily at such labor-intensive sectors of economies, including the public sector, health care, and education. Micklethwait and Woolridge, *The Fourth Revolution*, pp. 109–110.
- ⁸⁸ Micklethwait and Woolridge, *The Fourth Revolution*, p. 222.
- ⁸⁹ Osterhammel, *The Transformation of the World*, pp. 907–919.
- ⁹⁰ Schmidt, “Innovation Power.”
- ⁹¹ The first-phase study reviewed evidence for these trends; see Mazarr, *Societal Foundations of National Competitiveness*, Chapter 10.
- ⁹² Von Clausewitz, *On War*, pp. 592–593.
- ⁹³ Roxborough, “Clausewitz and the Sociology of War,” p. 622.
- ⁹⁴ For a useful summary of China’s sources of competitive advantage in the information age, see Carnegie Endowment, “How Chinese Technology Made China an Innovation Powerhouse.”
- ⁹⁵ For one prominent (and controversial) case for a distinct Chinese version of modernization, see Jacques, *When China Rules the World*. For a more balanced recent assessment of China’s alternative approach, see Chu, Po-Ching, and Chang Fa, *Ultimate Economic Conflict Between China and Democratic Countries*.
- ⁹⁶ For an argument about world-class management techniques being pursued by Chinese private sector firms—an essay that seems perhaps unbalanced in its praise of the Chinese firms but is nonetheless instructive—see Greeven, Xin, and Yip, “How Chinese Companies Are Reinventing Management.” In particular, the article emphasizes how some Chinese firms build significant degrees of work team autonomy into their operations, against the caricature of centrally planned systems that cannot provide for grassroots initiative.
- ⁹⁷ For information on Beijing’s strategy for achieving just such a result, see Tai Ming, *Innovate to Dominate*.
- ⁹⁸ See, for example, Hofman, “Will China’s New Party Tech Commission Help or Hurt?”
- ⁹⁹ Zongyuan and Steil, “Xi’s Plan for China’s Economy Is Doomed to Fail.”
- ¹⁰⁰ We are grateful to our RAND colleague Jordan Willcox for this phrase and idea.
- ¹⁰¹ See, for example, Watney, “But Seriously, How Do We Make an Entrepreneurial State?” For a broader treatment, see Kattel, Drechsler, and Karo, *How to Make an Entrepreneurial State*.
- ¹⁰² Hobsbawm, *Industry and Empire*, p. 156. The data on Britain’s relative decline are stark (p. 160): In 1913, Germany had 60,000 university students compared with Britain’s 9,000. Germany was producing 3,000 graduate engineers per year; in England and Wales together, “only 350 graduated in all branches of science, technology and mathematics with first- and second-class honors.”
- ¹⁰³ Hobsbawm, *Industry and Empire*, pp. 160–163.
- ¹⁰⁴ Hobsbawm, *Industry and Empire*, pp. 166, 170.

References

- Abramovitz, Moses, “The Elements of Social Capability,” in Bon Ho Koo and Dwight H. Perkins, eds., *Social Capability and Long-Term Economic Growth*, St. Martin’s Press, 1995.
- Accenture, “Artificial Intelligence Poised to Double Annual Economic Growth Rate in 12 Developed Economies and Boost Labor Productivity by up to 40 Percent by 2035, According to New Research by Accenture,” press release, September 28, 2016.
- Acemoglu, Daron, “The End of Democratic Capitalism? How Inequality and Insecurity Fueled a Crisis in the West,” *Foreign Affairs*, July/August 2023.
- Adrian, Tobias, and Tommaso Mancini Griffoli, “The Rise of Digital Money,” *International Monetary Foundation Fintech Notes*, July 15, 2019.
- Akcigit, Ufuk, and Sina T. Ates, “What Happened to U.S. Business Dynamism?” National Bureau of Economic Research, April 2019.
- Alderucci, Dean, Lee G. Branstetter, E. Hovy, Andrew Runge, Maria Ryskina, and Nick Zolas, “Quantifying the Impact of AI on Productivity and Labor Demand: Evidence from U.S. Census Microdata,” National Bureau of Economic Research, 2019.
- Alesina, Alberto, Sule Özler, Nouriel Roubini, and Phillip Swagel, “Political Instability and Economic Growth,” *Journal of Economic Growth*, Vol. 1, No. 2, 1996.
- Allard, Gayle, Candace A. Martinez, and Christopher Williams, “Political Instability, Pro-Business Market Reforms and Their Impacts on National Systems of Innovation,” *Research Policy*, Vol. 41, No. 3, 2012.
- Allen, Jennifer, Baird Howland, Markus Mobius, David Rothschild, and Duncan J. Watts, “Evaluating the Fake News Problem at the Scale of the Information Ecosystem,” *Science Advances*, Vol. 6, No. 14, April 3, 2020.
- Altman, Steven A., and Caroline R. Bastian, “The State of Globalization in 2022,” *Harvard Business Review*, April 12, 2022.
- Antonio, Robert J., “After Postmodernism: Reactionary Tribalism,” *American Journal of Sociology*, Vol. 106, No. 1, 2000.
- Army Futures Command, *Future Operational Environment: Forging the Future in an Uncertain World 2035–2050*, U.S. Army, 2021.
- Arsov, Ivailo, and Benjamin Watson, “Potential Growth in Advanced Economies,” *Reserve Bank of Australia Bulletin*, December 2019.
- Azhar, Azeem, *The Exponential Age: How Accelerating Technology Is Transforming Business, Politics and Society*, Diversion Books, 2021.
- Balz, Dan, and Clara Ence Morse, “American Democracy Is Cracking. These Forces Help Explain Why,” *Washington Post*, August 18, 2023.
- Baquer, Oriol Carreras, and Adrià Morron Salmeron, “Why Productivity Growth Is Declining,” Caixa Bank, February 15, 2018.
- Barker, Joel Arthur, *Paradigms: The Business of Discovering the Future*, Harper Business, 1992.
- Bauman, Zygmunt, *Liquid Modernity*, Polity Press, 2000.
- Bauman, Zygmunt, *Postmodernity and Its Discontents*, Polity Press, 2013.
- Becker, Jeff, “Joint Operating Environment 2040,” *Mad Scientist Laboratory* blog, December 10, 2020.
- Bergeaud, Antonin, Gilbert Cetté, and Rémy Lecat, “Long-Term Growth and Productivity Trends: Secular Stagnation or Temporary Slowdown?” *Revue de l’OFCE*, Vol. 157, No. 3, 2018.
- Berkeley Economic Review, “The Japanese Economic Miracle,” webpage, January 26, 2023. As of October 16, 2023: <https://econreview.berkeley.edu/the-japanese-economic-miracle/>
- Besley, Timothy, and Torsten Persson, “The Origins of State Capacity: Property Rights, Taxation, and Politics,” *American Economic Review*, Vol. 99, No. 4, September 2009.
- Berger, Peter, ed., *The Desecularization of the World*, William Eerdmans, 1999.
- Berger, Peter, and Thomas Luckman, *Modernity, Pluralism, and the Crisis of Meaning: The Orientation of Modern Man*, Bertelsmann Foundation Publishers, 1995.
- Bevir, Mark, “Governance,” Encyclopedia Britannica, webpage, undated. As of October 16, 2023: <https://www.britannica.com/topic/governance>
- Bhutata, Govind, “The U.S. Share of the Global Economy over Time,” Visual Capitalist, January 14, 2021.
- Bloom, David E., and Leo Zucker, “Aging Is the Real Population Boom,” *Finance & Development*, 2022.
- Borghard, Erica D., “A Grand Strategy Based on Resilience,” *War on the Rocks*, January 4, 2021.
- Brackup, Julia, Sarah Harting, and Daniel Gonzales, *Digital Infrastructure and Digital Presence: A Framework for Assessing the Impact on Future Military Competition and Conflict*, RAND Corporation, RR-A877-1, 2022. As of October 17, 2023: https://www.rand.org/pubs/research_reports/RRA877-1.html

- Brady, Henry E., and Thomas B. Kent, “Fifty Years of Declining Confidence and Increasing Polarization in Trust in American Institutions,” *Daedalus*, Vol. 151, No. 4, 2022.
- Bremmer, Ian, “Globalization Isn’t Dead: The World Is More Fragmented, but Interdependence Still Rules,” *Foreign Affairs*, October 25, 2022.
- Brilliant, Myron, “10 Trends in 2022: Global Perspectives for Business,” U.S. Chamber of Commerce, January 21, 2022.
- Brodie, Bernard, and Fawn M. Brodie, *From Crossbow to H-Bomb: The Evolution of the Weapons and Tactics of Warfare*, Indiana University Press, 1973.
- Brower, Derek, and Amanda Chu, “The U.S. Plan to Become the World’s Cleantech Superpower,” *Financial Times*, February 16, 2023.
- Bughin, Jacques, Jeongmin Seong, James Manyika, Michael Chui, and Raoul Joshi, “Notes from the AI Frontier: Modeling the Impact of AI on the World Economy,” McKinsey & Company, September 4, 2018.
- Burgess, Matthew G., Amanda R. Carrico, Steven D. Gaines, Alessandro Peri, and Steve Vanderheiden, “Prepare Developed Democracies for Long-Run Economic Slowdowns,” *Nature Human Behavior*, Vol. 5, No. 12, 2021.
- Burke, Sharon E., Llewelyn Hughes, Phung Quoc Huy, Kristin Vekasi, and Yu-Hsuan Wu, *Critical Minerals: Global Supply Chains and Indo-Pacific Geopolitics*, Special Report No. 102, National Bureau of Asian Research, 2022.
- Butkiewicz, James L., and Halit Yanikkaya, “The Impact of Sociopolitical Instability on Economic Growth: Analysis and Implications,” *Journal of Policy Modeling*, Vol. 27, No. 5, 2005.
- Butler, Declan, “Tomorrow’s World,” *Nature*, Vol. 530, February 2016.
- Calo, Ryan, and Danielle Keats Citron, “The Automated Administrative State: A Crisis of Legitimacy,” *Emory Law Journal*, Vol. 70, No. 4, 2021.
- Carnegie Endowment, “How Chinese Technology Made China an Innovation Powerhouse,” video, January 10, 2023. As of October 17, 2023: <https://www.youtube.com/watch?v=VXJLKlZWYk8>
- Castells, Manuel, *The Information Age: The Rise of Society*, Vol. 1, Blackwell, 1996.
- Castells, Manuel, *The Information Age: The Power of Identity*, Vol. 2, Blackwell, 1997.
- Castells, Manuel, *The Information Age: End of Millennium*, Vol. 3, Blackwell, 1998.
- Castillo, Rodrigo, and Caitlin Purdy, “China’s Role in Supplying Critical Minerals for the Global Energy Transition: What Could the Future Hold?” Brookings Institution, August 1, 2022.
- Chandra, Siddharth, and Angela Williams, “The ‘Revolution of Rising Expectations,’ Relative Deprivation, and the Urban Social Disorders of the 1960s: Evidence from State-Level Data,” *Social Science History*, Vol. 29, No. 2, 2005.
- Chazan, Guy, and Patricia Nilsson, “Germany Confronts a Broken Business Model,” *Financial Times*, December 6, 2022.
- Chorzempa, Martin, *The Cashless Revolution: China’s Reinvention of Money and the End of America’s Domination of Finance and Technology*, PublicAffairs, 2022.
- Chu, C. Y. Cyrus, Po-Ching Lee, and Chang Fa Lo, *Ultimate Economic Conflict Between China and Democratic Countries*, Routledge, 2022.
- Chui, Michael, Matthias Evers, James Manyika, Alice Zheng, and Travers Nisbet, “The Bio Revolution: Innovations Transforming Economies, Societies, and Our Lives,” McKinsey & Company, May 13, 2020.
- Cingolani, L., “The State of State Capacity: A Review of Concepts, Evidence and Measures,” United Nations University, Maastricht Economic and Social Research Institute on Innovation and Technology, 2013.
- Cockburn, Iain M., Rebecca Henderson, and Scott Stern, “The Impact of Artificial Intelligence on Innovation,” National Bureau of Economic Research, Working Paper No. 24449, March 2018.
- Collison, Patrick, and Michael Nielsen, “Science Is Getting Less Bang for Its Buck,” *The Atlantic*, November 16, 2018.
- Congressional Budget Office, *The Budget and Economic Outlook: 2022 to 2032*, May 2022.
- Congressional Budget Office, *The 2022 Long-Term Budget Outlook*, July 2022.
- Connors, Tom, “How China May Soon Lead the Bio-Revolution,” Bloomberg, March 29, 2022.
- Crawford, Robert J., “Reinterpreting the Japanese Economic Miracle,” *Harvard Business Review*, January–February 1998.
- Damioli, Giacomo, Vincent Van Roy, and Daniel Vertesy, “The Impact of Artificial Intelligence on Labor Productivity,” *Eurasian Business Review*, Vol. 11, 2021.
- De Vries, Jan, *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to Present*, Cambridge University Press, 2008.

Deane, Phyllis, *The First Industrial Revolution*, Cambridge University Press, 1980.

DeLong, J. Bradford, “What Went Right in the 1990s? Sources of American and Prospects for World Economic Growth,” *Reserve Bank of Australia Conference Proceedings*, 2000.

Demsas, Jerusalem, “Why Does It Cost So Much to Build Things in America?” *Vox*, June 28, 2021.

DiChristopher, Tom, “2018 Was Earth’s Fourth-Hottest Year on Record, NOAA and NASA Report,” *CNBC.com*, February 6, 2019.

Dieppe, Alistair, “The Broad-Based Productivity Slowdown, in Seven Charts,” *World Bank*, July 14, 2020.

Diffenbaugh, Noah S., Deepti Singh, Justin S. Mankin, and Bala Rajaratnam, “Quantifying the Influence of Global Warming on Unprecedented Extreme Climate Events,” *Proceedings of the National Academy of Sciences*, Vol. 114, No. 19, April 24, 2017.

Dupuy, Trevor N., *The Evolution of Weapons and Warfare*, Da Capo Publishing, 1994.

Eberstadt, Nicholas, “With Great Demographics Comes Great Power: Why Population Will Drive Geopolitics,” *Foreign Affairs*, July/August 2019.

Eberstadt, Nicholas, “America Hasn’t Lost Its Demographic Advantage: Its Rivals Are in Much Worse Shape,” *Foreign Affairs*, May 24, 2021.

Edelman, 2023 *Edelman Trust Barometer: Global Report*, 2023.

Edwards, Chris, “Federal Debt and Unfunded Entitlement Promises,” *Cato at Liberty* blog, January 21, 2022.

“Excess Deaths Are Soaring as Health-Care Systems Wobble,” *The Economist*, January 19, 2023.

“Fake News Flourishes When Partisan Audiences Crave It,” *The Economist*, April 5, 2018.

Farooq, Rana, *Homecoming: The Path to Prosperity in a Post-Global World*, Crown, 2022.

Farrell, Henry, and Abraham L. Newman, “Weaponized Interdependence: How Global Economic Networks Shape State Coercion,” *International Security*, Vol. 44, No. 1, 2019.

Fedasiuk, Ryan, “Regenerate: Biotechnology and U.S. Industrial Policy,” *Center for a New American Security*, July 28, 2022.

Federal Reserve Bank of New York, “Global Supply Chain Pressure Index (GSCPI),” webpage, undated. As of October 17, 2023: <https://www.newyorkfed.org/research/policy/gscpi/#/overview>

Fletcher, Richard, Alessio Cornia, Lucas Graves, and Rasmus Kleis Nielsen, “Measuring the Reach of ‘Fake News’ and Online Disinformation in Europe,” *Reuters Institute and University of Oxford*, February 2018.

Frankel, Jeffrey, and Peter Orszag, “Retrospective on American Economic Policy in the 1990s,” *Brookings Institution*, November 2, 2001.

Freeman, Rebecca, and Richard Baldwin, “Trade Conflict in the Age of COVID-19,” *VoxEU*, May 22, 2020.

French Republic, *National Strategic Review 2022*, 2022.

Fukuyama, Francis, *Trust: The Social Virtues and the Creation of Prosperity*, Free Press, 1995.

Furman, Jason, and Robert Seamans, “AI and the Economy,” *National Bureau of Economic Research*, Working Paper 24689, June 2018.

Gaspar, Vitor, Paulo Medas, and Roberto Perrelli, “Global Debt Reaches a Record \$226 Trillion,” *International Monetary Fund* blog, December 15, 2021.

Giddens, Anthony, *The Consequences of Modernity*, Stanford University Press, 1990.

Giddens, Anthony, *Modernity and Self-Identity: Self and Society in the Late Modern Age*, Stanford University Press, 1991.

Giddens, Anthony, *Runaway World: How Globalization Is Reshaping Our Lives*, Routledge, 2000.

Gilding, Paul, *The Great Disruption: Why the Climate Crisis Will Bring on the End of Shopping and the Birth of a New World*, Bloomsbury, 2011.

Giles, Chris, “‘Friendshoring’ Is a Risk to Growth and Financial Stability, Warns IMF,” *Financial Times*, April 5, 2023.

Giles, Chris, “Global Economy Set for Years of Weak Growth, IMF Chief Kristalina Georgieva Warns,” *Financial Times*, April 6, 2023.

Gluck, Carol, *Japan’s Modern Myths: Ideology in the Late Meiji Period*, Princeton University Press, 1985.

Gompert, David C., “National Security in the Information Age,” *Naval War College Review* Vol. 51, No. 4, 1998.

Goodheart, Charles, and Manoj Pradhan, *The Great Demographic Reversal: Ageing Societies, Waning Inequality, and an Inflation Revival*, Palgrave Macmillan, 2020.

Gordon, Robert J., “Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds,” *National Bureau of Economic Research*, August 2012.

- Greeven, Mark J., Katherine Xin, and George S. Yip, “How Chinese Companies Are Reinventing Management,” *Harvard Business Review*, March–April 2023.
- Gross, Jenny, “How Finland Is Teaching a Generation to Spot Misinformation,” *New York Times*, January 10, 2023.
- Habermas, Jürgen, *Legitimation Crisis*, trans. by Thomas McCarthy, Beacon Press, 1975.
- Hamel, Gary, and Michele Zanini, “Excess Management Is Costing the U.S. \$3 Trillion per Year,” *Harvard Business Review*, September 5, 2016.
- Hanlon, Michael, “The Golden Quarter,” Aeon, 2014.
- Hanspach, Philip, “Internet Infrastructure and Competition in Digital Markets,” European University Institute Department of Economics, October 21, 2022.
- Harmstone, Andrew, “Five Sectors That Cannot Escape Climate Change,” Morgan Stanley, February 2020.
- Hetherington, Marc J., “The Political Relevance of Political Trust,” *American Political Science Review*, Vol. 92, No. 4, 1998.
- Heylen, Frederik, Evelien Willems, and Jan Beyers, “Do Professionals Take Over? Professionalisation and Membership Influence in Civil Society Organisations,” *Voluntas*, Vol. 31, 2020.
- Hillman, Jonathan E., *The Digital Silk Road: China’s Quest to Wire the World and Win the Future*, Harper Business, 2021.
- Himmelfarb, Gertrude, *Past and Present: The Challenges of Modernity, from the Pre-Victorians to the Postmodernists*, Encounter Classics, 2017.
- Hobsbawm, Eric, *Industry and Empire: The Birth of the Industrial Revolution*, New Press, 1968.
- Hoehn, Andrew, and Thom Shanker, *Age of Danger: Keeping America Safe in an Era of New Superpowers, New Weapons, and New Threats*, Hachette Books, 2023.
- Hofman, Bert, “Will China’s New Party Tech Commission Help or Hurt?” *Bert’s Newsletter* blog, April 10, 2023.
- Horowitz, Michael, Elsa B. Kania, Gregory C. Allen, and Paul Scharre, “Strategic Competition in an Era of Artificial Intelligence,” Center for a New American Security, July 25, 2018.
- “How the West Fell Out of Love with Economic Growth,” *The Economist*, December 11, 2022.
- Huang Yanzhong, “The Coronavirus Outbreak Could Disrupt the U.S. Drug Supply,” Council on Foreign Relations, March 5, 2020.
- Hundley, Richard, *Past Revolutions, Future Transformations: What Can the History of Revolutions in Military Affairs Tell Us About Transforming the U.S. Military?* RAND Corporation, MR-1029-DARPA, 1999. As of October 16, 2023: https://www.rand.org/pubs/monograph_reports/MR1029.html
- Igielnik, Ruth, “70% of Americans Say U.S. Economic System Unfairly Favors the Powerful,” Pew Research Center, January 9, 2020.
- Ignatius, David, “How the Algorithm Tipped the Balance in Ukraine,” *Washington Post*, December 19, 2022.
- Ikenberry, G. John, “The Triumph of Broken Promises: The End of the Cold War and the Rise of Neoliberalism,” *Foreign Affairs*, February 28, 2023.
- Ilchman, Warren F., “Review: Rising Expectations and the Revolution in Development Administration,” *Public Administration Review*, Vol. 25, No. 4, December 1965.
- Inglehart, Ronald F., *Modernization and Postmodernization: Cultural, Economic, and Political Change in 43 Societies*, Princeton University Press, 1997.
- Inglehart, Ronald F., *Cultural Evolution*, Cambridge University Press, 2018.
- International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions*, May 5, 2021.
- International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, May 11, 2021.
- International Monetary Fund Fiscal Affairs Department, 2022 *Global Debt Monitor*, December 2022.
- Jacques, Martin, *When China Rules the World: The End of the Western World and the Birth of a New Global Order*, Penguin, 2012.
- Joint Chiefs of Staff, *Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World*, July 14, 2016.
- Jones, Charles I., “The End of Economic Growth? Unintended Consequences of a Declining Population,” *American Economic Review*, Vol. 112, No. 11, 2022.
- Jones, Jeffrey M., “Confidence in U.S. Institutions Down; Average at New Low,” Gallup, July 5, 2022.
- Jorgenson, Dale W., Kevin J. Stiroh, Robert J. Gordon, and Daniel E. Sichel, “Raising the Speed Limit: U.S. Economic Growth in the Information Age,” *Brookings Papers on Economic Activity*, Vol. 2000, No. 1, 2000.

J. P. Morgan Asset Management, *The Lifeboat Economy: Implications of a Fracturing World Economy*, 2022.

Jyothi, Sangeetha Abdu, “Solar Superstorms: Planning for an Internet Apocalypse,” *Proceedings of Special Interest Group on Data Communication 2021*, August 23–27, 2021.

Kattel, Rainer, Wolfgang Drechsler, and Erkki Karo, *How to Make an Entrepreneurial State: Why Innovation Needs Bureaucracy*, Yale University Press, 2022.

Keane, Michael, and Haiqing Yu, “A Digital Empire in the Making: China’s Outbound Digital Platforms,” *International Journal of Communication*, Vol. 13. 2019.

Kearney, Melissa, “America’s Shrinking Population Is Here to Stay,” *Financial Times*, December 29, 2022.

Kennedy, Paul, *The Rise and Fall of the Great Powers*, Penguin Random House, 1987.

Klein, Ezra, “The Story Construction Tells About America’s Economy Is Disturbing,” *New York Times*, February 5, 2023.

Kim, Sung-Young, “National Competitive Advantage and Energy Transitions in Korea and Taiwan,” *New Political Economy*, Vol. 26, No. 3, 2021.

KOF Swiss Economic Institute, “KOF Globalisation Index,” webpage, undated. As of October 18, 2023:
<https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>

Krantz, Matt, “13 Firms Hoard \$1 Trillion in Cash (We’re Looking at You Big Tech),” *Investors Business Daily*, February 3, 2022.

Kuhn, Thomas S., *The Structure of Scientific Revolutions*, University of Chicago Press, 1996.

Ladurie, Emmanuel LeRoy, “Motionless History,” *Social Science History*, Vol. 1, No. 2, 1977.

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

Lehmann-Hasemeyer, Sibylle, Klaus Prettnner, and Paul Tscheuschner, “The Scientific Revolution and Its Role in the Transition to Sustained Economic Growth,” November 29, 2021.

Leruth, Luc, and Adnan Mazarei, “Who Controls the World’s Minerals Needed for Green Energy?” Peterson Institute for International Economics, August 9, 2022.

Lipset, Seymour Martin, and William Schneider, “The Decline of Confidence in American Institutions,” *Political Science Quarterly*, Vol. 98, No. 3, 1983.

Liu Chuyu and Johannes Urpelainen, “Why the United States Should Compete with China on Global Clean Energy Finance,” Brookings Institution, January 7, 2021.

Liu Zongyuan Zoe and Benn Steil, “Xi’s Plan for China’s Economy Is Doomed to Fail,” *Foreign Affairs*, June 29, 2023.

Lofgren, Eric, Whitney M. McNamara, and Peter Modigliani, *Commission on Defense Innovation Adoption: Interim Report*, Atlantic Council, April 2023.

Löwy, Michael, and Robert Sayre, *Romanticism Against the Tide of Modernity*, trans. by Catherine Porter, Duke University Press, 2001.

Macaskill, William, “The Beginning of History,” *Foreign Affairs*, Vol. 101, No. 5, September–October 2022.

Maddison, Angus, *The World Economy: A Millennial Perspective*, Organization for Economic Cooperation and Development, 2001.

Manak, Inu, and Logan Kolas, “Supply Chains and Interdependence: Is This Really a Problem That Needs Solving?” Cato Institute, June 17, 2020.

Manjoo, Farhad, *True Enough: Learning to Live in a Post-Fact Society*, John Wiley, 2008.

Mann, Thomas E., and Norman J. Ornstein, *The Broken Branch: How Congress Is Failing America and How to Get It Back on Track*, Oxford University Press, 2008.

Mau, Vladimir, and Tatiana Drobyshevskaya, “Modernization and the Russian Economy: Three Hundred Years of Catching Up,” June 1, 2012.

Mazarr, Michael J., “Time for a New Approach to Defense Strategy,” *War on the Rocks*, July 29, 2021.

Mazarr, Michael J., *The Societal Foundations of National Competitiveness*, RAND Corporation, RR-A499-1, 2022. As of October 16, 2023:
https://www.rand.org/pubs/research_reports/RRA499-1.html

McArdle, Megan, “From the Hoover Dam to the Second Avenue Subway, America Builds Slower,” *Washington Post*, June 27, 2023.

McCarty, Michael, “What Happened to the Biotechnology Revolution?” *Lancet*, June 2, 2007.

McGrath, Michael, “Beyond Distrust: When the Public Loses Faith in American Institutions,” *National Civic Review*, Vol. 106, No. 2, 2017.

- McKinsey & Company, *Energy: A Key to Competitive Advantage*, 2009.
- McNeill, William H., “The Care and Repair of Public Myth,” *Foreign Affairs*, Fall 1982.
- Meier, Kenneth J., Mallory Compton, John Polga-Hecimovich, Miyeon Song, and Cameron Wimpy, “Bureaucracy and the Failure of Politics: Challenges to Democratic Governance,” *Administration and Society*, Vol. 51, No. 10, 2019.
- Meredith, Sam, and Lucy Handley, “‘It Is Entirely Doable, and It Is Doable Fast’: Experts on How to Navigate the Energy Transition,” CNBC.com, November 22, 2021.
- Micklethwait, John, and Adrian Woolridge, *The Fourth Revolution: The Global Race to Reinvent the State*, Penguin Books, 2014.
- Mizruchi, Mark S., *The Fracturing of the American Corporate Elite*, Harvard University Press, 2013.
- Mokyr, Joel, *The Lever of Riches: Technological Creativity and Economic Progress*, Oxford University Press, 1992.
- Mosleh, Mohsen, and David G. Rand, “Measuring Exposure to Misinformation from Political Elites on Twitter,” *Nature Communications*, Vol. 13, No. 7144, 2022.
- Moss, Emily, Ryan Nunn, and Jay Shambaugh, “The Slowdown in Productivity Growth and Policies That Can Restore It,” Hamilton Project Framing Paper, June 2020.
- Muhammed T., Sadiq, and Saji K. Mathew, “The Disaster of Misinformation: A Review of Research in Social Media,” *International Journal of Data Science Analysis*, Vol. 13, 2022.
- Murray, Brian, Jonas Monast, Chi-Jen Yang, and Justine Chow, “The United States, China, and the Competition for Clean Energy,” Duke University Nicholas Institute for Environmental Policy Solutions, July 2011.
- Nahm, Jonas, *Collaborative Advantage: Forging Green Industries in the New Global Economy*, Oxford University Press, 2021.
- Nahm, Jonas, “Clean Energy Technology and U.S. Industrial Policy,” Center for a New American Security, September 2022.
- National Centers for Environmental Information, “U.S. Climate Extremes Index Puts Extremes into Historical Context,” webpage, updated December 2, 2021. As of October 18, 2023: <https://ncei.noaa.gov/news/us-climate-extremes-index>
- National Intelligence Council, *Global Trends 2030: Alternative Worlds*, December 2012.
- National Intelligence Council, *Global Trends: Paradox of Progress*, January 2017.
- National Intelligence Council, *Global Trends 2040: A More Contested World*, March 2021.
- Neal, Kohl, “How Bad Bureaucracy Sabotages Democracy,” *Current Affairs*, December 16, 2020.
- Neely, Christopher J., “Inflation and the Real Value of Debt: A Double-Edged Sword,” Federal Reserve Bank of St. Louis, August 1, 2022.
- Nightingale, Paul, and Paul Martin, “The Myth of the Biotech Revolution,” *Trends in Biotechnology*, Vol. 22, No. 11, November 1, 2004.
- OECD—See Organization for Economic Cooperation and Development.
- Oliner, Stephen D., and Daniel E. Sichel, “The Resurgence of Growth in the Late 1990s: Is Information Technology the Story,” Board of Governors of the Federal Reserve System, April 2000.
- Organization for Economic Cooperation and Development, *The Next Production Revolution: Implications for Governments and Business*, May 10, 2017.
- Organization for Economic Cooperation and Development, “Trust in Government,” webpage, undated. As of October 17, 2023: <https://www.oecd.org/governance/trust-in-government/>
- Orlik, Tom, Ana Galvao, and Scott Johnson, “A Practical Way to Make Sense of All the Shocks Hammering the Global Economy,” *Bloomberg Businessweek*, November 3, 2022.
- Osterhammel, Jürgen, *The Transformation of the World: A Global History of the Nineteenth Century*, Princeton University Press, 2014.
- Park, Michael, Erin Leahey, and Russell J. Funk, “Papers and Patents Are Becoming Less Disruptive over Time,” *Nature*, Vol. 613, January 4, 2023.
- Perreault, Charles, “The Pace of Cultural Evolution,” *Public Library of Science One*, Vol. 7, No. 9, September 14, 2012.
- Pew Research Center, “Americans’ Views of Government: Decades of Distrust, Enduring Support for Its Role,” June 6, 2022.
- Pew Research Center, “Public Trust in Government: 1958–2022,” June 6, 2022.
- Porter, Michael, *The Competitive Advantage of Nations*, Harvard Business School Press, 1990.
- Posen, Adam S., “The End of Globalization? What Russia’s War in Ukraine Means for the World Economy,” *Foreign Affairs*, March 17, 2022.

Prasad, Eswar S., *The Future of Money: How the Digital Revolution Is Transforming Currencies and Finance*, Harvard University Press, 2021.

PricewaterhouseCoopers, *Sizing the Prize: PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution*, 2017.

Pummerer, Lotte, Robert Böhm, Lau Lilleholt, Kevin Winter, Ingo Zettler, and Kai Sassenberg, "Conspiracy Theories and Their Societal Effects During the COVID-19 Pandemic," *Social Psychological and Personality Science*, Vol. 13, No. 1, 2022.

Rachel, Lukasz, and Lawrence H. Summers, "On Secular Stagnation in the Industrialized World," *Brookings Papers on Economic Activity*, Spring 2019.

Rainie, Lee, Scott Keeter, and Andrew Perrin, "Trust and Distrust in America," Pew Research Center, July 22, 2019.

Rauch, Jonathan, *Demosclerosis: The Silent Killer of American Government*, Random House, 1994.

Reinhart, Carmen M., Vincent R. Reinhart, and Kenneth S. Rogoff, "Public Debt Overhangs: Advanced-Economy Episodes Since 1800," *Journal of Economic Perspectives*, Vol. 26, No. 3, 2012.

Rennert, Kevin, Frank Errickson, Brian C. Prest, Lisa Rennels, Richard G. Newell, William Pizer, Cora Kingdon, Jordan Wingemroth, Roger Cooke, Bryan Parthum, David Smith, Kevin Cromar, Delavane Diaz, Frances C. Moore, Ulrich K. Müller, Richard J. Plevin, Adrian E. Raftery, Hana Ševčíková, Hannah Sheets, James H. Stock, Tammy Tan, Mark Watson, Tony E. Wong, and David Anthoff, "Comprehensive Evidence Implies a Higher Social Cost of CO₂," *Nature*, Vol. 610, 2022.

Reza, Abeer, and Subrata Sarker, "Is Slower Growth the New Normal in Advanced Economies?" *Bank of Canada Review*, Autumn 2015.

Ritchie, Hannah, Lucas Rodés-Guirao, Edouard, Mathieu, Marcel Gerber, Esteban Ortiz-Ospina, Joe Hasell, and Max Roser, "Population Growth," Our World in Data, webpage, undated. As of October 23, 2023: <https://ourworldindata.org/population-growth>

Ronfeldt, David, and John Arquilla, *Whose Story Wins: Rise of the Noosphere, Noopolitik, and Information-Age Statecraft*, RAND Corporation, PE-A237-1, 2020. As of October 18, 2023: <https://www.rand.org/pubs/perspectives/PEA237-1.html>

Rosa, Hartmut, *Social Acceleration: A New Theory of Modernity*, trans. by Jonathan Trejo-Mathys, Columbia University Press, 2015.

Rossi, Emilio, "Deglobalization or Slowbalization?" *Aspenia Online*, May 16, 2022.

Roxborough, Ian, "Clausewitz and the Sociology of War," *British Journal of Sociology*, Vol. 45, No. 4, 1994.

Saad, Lydia, "Historically Low Faith in U.S. Institutions Continues," Gallup, July 6, 2023.

Scharre, Paul, "AI's Inhuman Advantage," *War on the Rocks*, April 20, 2023.

Scheidel, Walter, *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*, Princeton University Press, 2018.

Schmidt, Eric, "Innovation Power: Why Technology Will Define the Future of Geopolitics," *Foreign Affairs*, March/April 2023.

Scott, Jonathan, *How the Old World Ended: The Anglo-Dutch-American Revolution 1500–1800*, Yale University Press, 2019.

Serbu, Jared, "DoD Suddenly Abandons \$374 Million Plan to Replace Defense Travel System," Federal News Network, June 1, 2023.

Shafik, Nemat, "A New Social Contract," *International Monetary Fund Finance and Development*, December 2018.

Shapin, Steven, *The Scientific Revolution*, University of Chicago Press, 1998.

Shih, Willy C., "Are the Risks of Global Supply Chains Starting to Outweigh the Rewards?" *Harvard Business Review*, March 21, 2022.

Sitaraman, Ganesh, "A Grand Strategy of Resilience: American Power in the Age of Fragility," *Foreign Affairs*, September–October 2020.

Skocpol, Theda, *Diminished Democracy: From Membership to Management in American Civic Life*, University of Oklahoma Press, 2004.

Smith, Steven B., *Modernity and Its Discontents: Making and Unmaking the Bourgeois from Machiavelli to Bellow*, Yale University Press, 2018.

Special Competitive Studies Project, *Mid-Decade Challenges to National Competitiveness*, September 2022.

Stenling, Cecilia, and Michael Sam, "Professionalization and Its Consequences: How Active Advocacy May Undermine Democracy," *European Sport Management Quarterly*, Vol. 20, No. 5, 2020.

Steuerle, Eugene, "Restoring Fiscal Democracy," *Milken Institute Review*, First Quarter 2016.

Stocking, Galen, Amy Mitchell, Katerina Eva Matsa, Regina Widjaya, Mark Jurkowitz, Shreenita Ghosh, Aaron Smith, Sarah Naseer, and Christopher St. Aubin, *The Role of Alternative Social Media in the News and Information Environment*, Pew Research Center, October 6, 2022.

Suarez-Ledo, Victor, and Javier Alvarez-Galvez, “Prevalence of Health Misinformation on Social Media: Systematic Review,” *Journal of Medical Internet Research*, Vol. 23, No. 1, January 2021.

Summers, Lawrence H., “The Age of Secular Stagnation: What It Is and What to Do About It,” *Foreign Affairs*, February 15, 2016.

Sunstein, Cass R., *#republic: Divided Democracy in the Age of Social Media*, Princeton University Press, 2017.

Szczepański, Marcin, *Economic Impacts of Artificial Intelligence (AI)*, European Parliament, 2019.

Tai Ming Cheung, *Innovate to Dominate: The Rise of the Chinese Techno-Security State*, Cornell University Press, 2022.

Tertrais, Bruno, “The Seven Demographic Trends That Will Determine Our Global Future,” *World Politics Review*, August 24, 2021.

Thiele, Leslie Paul, “Twilight of Modernity: Nietzsche, Heidegger, and Politics,” *Political Theory*, Vol. 22, No. 3, 1994.

Thomson-DeVeaux, Amelia, and Zoha Qamar, “What Happens When Americans Don’t Trust Institutions?” Five Thirty-Eight.com, July 8, 2022.

Toh, Michelle, “Living Standards Are Still Falling in Japan. That’s a Recipe for More Stagnation,” CNN, April 12, 2023.

Torsekar, Mihir, “Intermediate Goods Imports in Key U.S. Manufacturing Sectors,” U.S. International Trade Commission, 2017.

Toulmin, Stephen, *Cosmopolis: The Hidden Agenda of Modernity*, University of Chicago Press, 1992.

Toynbee, Arnold J., *A Study of History: Abridgement of Volumes I–VI by D. C. Somervell*, Oxford University Press, 1947.

Transparency International, “Global Corruption Barometer EU: People Worried About Unchecked Abuses of Power,” June 15, 2021.

Transparency International, *Corruption Perceptions Index 2022*, 2023.

Tsafos, Nikos, “China’s Climate Change Strategy and U.S.-China Competition,” testimony before the U.S.-China Economic and Security Review Commission, Center for Strategic and International Studies, March 17, 2022.

Turchin, Peter, *Historical Dynamics: Why States Rise and Fall*, Princeton University Press, 2003.

Tytell, Irina, Dirk Hofschire, and Jacob Weinstein, *Secular Outlook for Global Growth: The Next 20 Years*, Fidelity, 2023.

United Kingdom Ministry of Defence, *Strategic Trends Programme: Global Strategic Trends—Out to 2045*, 5th ed., 2014.

United Nations, “Population Division,” webpage, undated. As of October 23, 2023: <https://www.un.org/development/desa/pd/>

United Nations Human Development, *Uncertain Times, Unsettled Lives: Shaping Our Future in a Transforming World*, 2022.

United Nations Human Rights Office of the High Commissioner, “About Good Governance,” webpage, undated. As of October 16, 2023: <https://www.ohchr.org/en/good-governance/about-good-governance>

U.S. Department of Defense, *2022 National Defense Strategy*, October 27, 2022.

U.S. Office of Management and Budget and Federal Reserve Bank of St. Louis, “Gross Federal Debt as Percent of Gross Domestic Product,” webpage, undated. As of October 18, 2023: <https://fred.stlouisfed.org/series/GFDGDPA188S>

Van Creveld, Martin, *Technology and War: From 2000 B.C. to the Present*, Touchstone, 1991.

Verhagen, Paul, Esther Chavannes, and Frank Bekkers, *Flow Security in the Information Age*, The Hague Center for Strategic Studies, 2020.

Vogel, Ezra F., *Japan as Number One: Lessons for America*, Harvard University Press, 1979.

Vollrath, Dietrich, *Fully Grown: Why a Stagnant Economy Is a Sign of Success*, University of Chicago Press, 2020.

Von Clausewitz, Carl, *On War*, ed. and trans. by Michael Howard and Peter Paret, Princeton University Press, 1976.

Vries, Peer, *Averting a Great Divergence: State and Economy in Japan, 1868–1937*, Bloomsbury Academic, 2019.

Wallach, Philip, “The Administrative State’s Legitimacy Crisis,” Center for Effective Management at Brookings, April 2016.

Watney, Caleb, “But Seriously, How Do We Make an Entrepreneurial State?” *American Affairs*, Vol. VI, No. 4, Winter 2022.

Weiss, Jason, and Dan Patt, “Software Defines Tactics,” *War on the Rocks*, January 23, 2023.

The White House, “The Rising Costs of Extreme Weather Events,” *Council of Economic Advisors blog*, September 1, 2022.

Williams, Heather J., and Caitlin McCulloch, *Truth Decay and National Security: Intersections, Insights, and Questions for Future Research*, RAND Corporation, PE-A112-2, 2023. As of October 18, 2023: <https://www.rand.org/pubs/perspectives/PEA112-2.html>

Willis, Derek, and Paul Kane, “How Congress Stopped Working,” ProPublica, November 5, 2018.

Wootton, David, *The Invention of Science: A New History of the Scientific Revolution*, Harper, 2015.

World Bank, “DataBank: Worldwide Governance Indicators,” webpage, undated. As of October 17, 2023: <https://databank.worldbank.org/source/worldwide-governance-indicators>

World Economic Forum, *The Global Risks Report 2022*, 17th ed., 2022.

World Economic Forum, *The Global Risks Report 2023*, 18th ed., January 2023.

Wrede, Insa, “Can the EU Do Without Metals from China?” DW.com, April 15, 2022.

Wright, Nicholas, “How Artificial Intelligence Will Reshape the Global Order,” *Foreign Affairs*, July 10, 2018.

Yan Xiao and Ziyang Fan, “3 Ways Digital Currencies Could Change Global Trade,” World Economic Forum, January 13, 2022.

Yeatman, William, “The Decline of Lawmaking Reflects a Diminished Congress,” Cato Institute, May 10, 2021.

Yeoh, Kenson, and Dingding Chen, “China-US Competition: Who Will Win the Digital Infrastructure Contest?” *The Diplomat*, December 21, 2022.

Acknowledgments

This paper represents the views of the authors and is partly informed by a wide range of RAND Corporation work on the future of the international order and strategic competition. The authors would like to thank James Baker and David Epstein in the Office of Net Assessment for supporting the research and providing thoughtful and helpful comments in various drafts; Jim Mitre of the RAND International Security and Defense Program for his assistance; and James Goldgeier and Karl Mueller for extraordinarily helpful peer reviews which substantially enhanced the final product.

About This Paper

This paper is part of a larger project that considers the societal sources of national dynamism and competitive advantage. The paper investigates a specific idea in relation to societal sources of advantage: that competitive success in great-power rivalries comes, in part, from being effectively aligned to the demands of the essential characteristics of a historical era—the competitive paradigm of the period. This paper investigated that idea in more depth, offering one theory of an emerging competitive paradigm and defining measurable indicators of success. The paper contends that the emerging strategic paradigm is best understood as a governance revolution.

This paper was completed in September 2023 and underwent security review with the sponsor before public release.

RAND National Security Research Division

This paper was completed within the International Security and Defense Policy Center of the RAND National Security Research Division (NSRD), which operates the RAND National Defense Research Institute (NDRI), a federally funded research and development center (FFRDC) sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense intelligence enterprise. This paper was made possible by NDRI exploratory research funding that was provided through the FFRDC contract and approved by NDRI's primary sponsor.

For more information on the RAND International Security and Defense Policy Center, see www.rand.org/nsrd/isdp or contact the director (contact information is provided on the webpage).

The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest.

Research Integrity

Our mission to help improve policy and decisionmaking through research and analysis is enabled through our core values of quality and objectivity and our unwavering commitment to the highest level of integrity and ethical behavior. To help ensure our research and analysis are rigorous, objective, and nonpartisan, we subject our research publications to a robust and exacting quality-assurance process; avoid both the appearance and reality of financial and other conflicts of interest through staff training, project screening, and a policy of mandatory disclosure; and pursue transparency in our research engagements through our commitment to the open publication of our research findings and recommendations, disclosure of the source of funding of published research, and policies to ensure intellectual independence. For more information, visit www.rand.org/about/research-integrity.

RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.

Limited Print and Electronic Distribution Rights

This publication and trademark(s) contained herein are protected by law. This representation of RAND intellectual property is provided for noncommercial use only. Unauthorized posting of this publication online is prohibited; linking directly to its webpage on rand.org is encouraged. Permission is required from RAND to reproduce, or reuse in another form, any of its research products for commercial purposes. For information on reprint and reuse permissions, please visit www.rand.org/pubs/permissions.

For more information on this publication, visit www.rand.org/t/PEA2611-1.

© 2024 RAND Corporation



www.rand.org



Research Report

MICHAEL J. MAZARR, ALEXIS DALE-HUANG, MATTHEW SARGENT

Trends Shaping the Emergent Paradigm

Annex

For more information on this publication, visit www.rand.org/t/PE-A2611-1.

About RAND

The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. To learn more about RAND, visit www.rand.org.

Research Integrity

Our mission to help improve policy and decisionmaking through research and analysis is enabled through our core values of quality and objectivity and our unwavering commitment to the highest level of integrity and ethical behavior. To help ensure our research and analysis are rigorous, objective, and nonpartisan, we subject our research publications to a robust and exacting quality-assurance process; avoid both the appearance and reality of financial and other conflicts of interest through staff training, project screening, and a policy of mandatory disclosure; and pursue transparency in our research engagements through our commitment to the open publication of our research findings and recommendations, disclosure of the source of funding of published research, and policies to ensure intellectual independence. For more information, visit www.rand.org/about/principles.

RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

Published by the RAND Corporation, Santa Monica, Calif.

© 2024 RAND Corporation

RAND® is a registered trademark.

Limited Print and Electronic Distribution Rights

This publication and trademark(s) contained herein are protected by law. This representation of RAND intellectual property is provided for noncommercial use only. Unauthorized posting of this publication online is prohibited; linking directly to its webpage on rand.org is encouraged. Permission is required from RAND to reproduce, or reuse in another form, any of its research products for commercial purposes. For information on reprint and reuse permissions, please visit www.rand.org/pubs/permissions.

About This Annex

This annex is part of a larger project that considers the societal sources of national dynamism and competitive advantage. This annex provides details about trends discussed in the full paper, *The Emerging Competitive Paradigm: A Contest of Effective Governance*. This paper and annex are part of a larger project investigating a specific idea in relation to societal sources of advantage: that competitive success in great-power rivalries comes, in part, from being effectively aligned to the demands of the essential characteristics of a historical era—the competitive paradigm of the period. In this phase of the larger project, we investigated that idea in more depth, offering one theory of an emerging competitive paradigm and defining measurable indicators of success. In the full paper, we contend that the emerging strategic paradigm is best understood as a *governance revolution*. This annex provides further information on the trends of that paradigm. For lists of abbreviations and references, please see the full report, which can be found at rand.org/pubs/perspectives/PEA2611-1.html.

RAND National Security Research Division

This research was conducted within the International Security and Defense Policy Center of the RAND National Security Research Division (NSRD), which operates the RAND National Defense Research Institute (NDRI), a federally funded research and development center (FFRDC) sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense intelligence enterprise. This research was made possible by NDRI exploratory research funding that was provided through the FFRDC contract and approved by NDRI's primary sponsor.

For more information on the RAND International Security and Defense Policy Center, see www.rand.org/nsrd/isdp or contact the director (contact information is provided on the webpage).

Contents

About This Annex.....	iii
Figure and Table	v
Leading Trends of the Emerging Competitive Paradigm.....	1
Trends Shaping the Competitive Paradigm: Society	1
Trends Shaping the Competitive Paradigm: Global Networks of Power and Influence	8
Trends Shaping the Competitive Paradigm: Economy	12
Trends Shaping the Competitive Paradigm: General and Contextual.....	17

Figure and Table

Figure

Figure 1. Demographic Trends: World Population by Age Cohort (United Nations Medium Fertility Scenario)	2
---	---

Table

Table 1. Confidence in Major U.S. Institutions, 2022.....	6
---	---

Leading Trends of the Emerging Competitive Paradigm

Any emerging competitive paradigm is a product of the leading trends of the era—technological, economic, political, and social factors that shape the environment in which empires or states seek competitive advantage. Often, these trends, their significance, and the relationships among them are more evident in retrospect than at the time; it could be dangerous to assume that the trends can be accurately diagnosed in progress. On the other hand, history suggests that once a paradigm has begun to settle in, its basic demands and the major trends driving them do become clear. Leading modernizers at key junctures—Peter the Great, Meiji Japan, Maoist China—have recognized the nature of their era and its trends and sought to realign their societies to thrive within its constraints. It might be possible to compile a portrait of the emerging competitive paradigm in similar ways.

The sections below briefly review major trends in five domains: society, international networks and systems, economy, information, and general aspects of the emerging context. In each case, we sought data to define the scope and importance of the trend, although in some cases these factors are not so easily measurable and can be characterized only in qualitative terms. Again, these are all global trends, and our argument is that the resulting paradigm applies to all nations. In some cases, because the implications of the paradigm for the United States are our primary concern, we present data focusing on the United States.

Two obvious risks attend to any effort to build a portrait of the future based on lists of current trends. The first danger is of omission—missing important, less-than-obvious trends that will end up shaping the future in ways not well understood at the time. Analysts can fall into this trap by relying on the existing conventional wisdom, standard-issue lists of trends on which many sources agree but that might miss key factors. There is no way to avoid this risk entirely, but we sought to mitigate it through both the broad reach of our research and outreach to multiple scholars and experts within and outside RAND to get the widest perspective on the forces shaping the future paradigm.

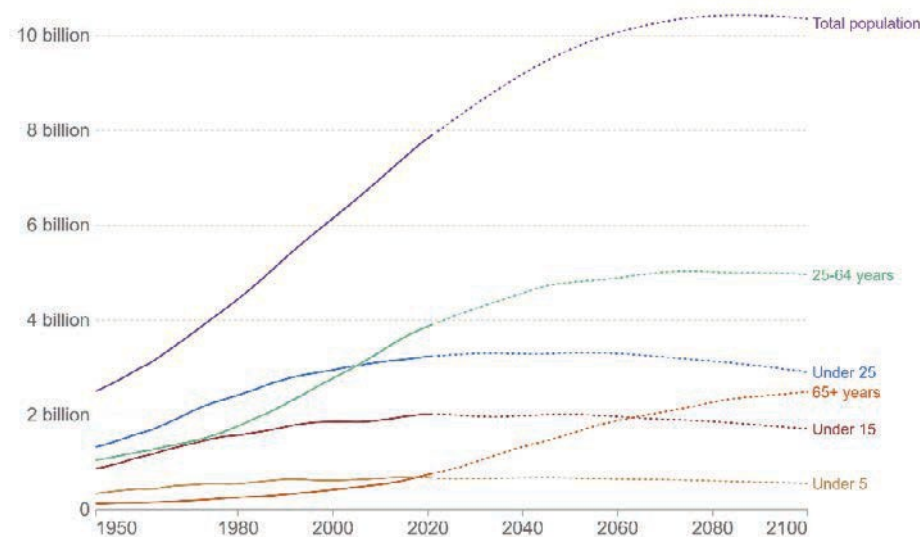
The second danger in any trend-based snapshot of the future is mistaken emphasis. In any mosaic of factors, a handful of them are likely to exercise disproportionate influence. Deciding which ones those are represents the heart of anticipatory insight—and yet there is no definitive way to validate such judgments. We draw our own conclusions about the most important trends in the next section; these are subjective and based on our best guesses and inevitably, therefore, reflect the limitations of such an approach.

Trends Shaping the Competitive Paradigm: Society

This section surveys paradigm-setting trends in the character of societies and the implications for competitive advantage.

Demographic shift and pressure on growth and productivity. One of the most profound trends in progress today is the aging of world population, a trend most evident in Europe and Asia but playing out in many other regions to a lesser degree (see Figure 1).¹ This will produce a decline in the labor force in key countries, the rise of the *corresponding dependency ratios* (the numbers of retirees per working-age person), and associated economic trends.² The result is likely to be stagnating growth and continued fiscal pressure given the economic burdens of an aging population (including the rise of such hugely expensive medical conditions as dementia). Some analysts believe that these changes will be accompanied by a secular rise in inflation and interest rates.³ The United States might have something of an advantage relative to its major competitors in this regard,⁴ and some developing countries (mainly in Africa) have the prospect of significantly growing populations. But the general trend is clear: smaller, aging populations.

Figure 1. Demographic Trends: World Population by Age Cohort (United Nations Medium Fertility Scenario)



SOURCES: United Nations, “Population Division”; Ritchie et al., “Population Growth.”

The implications for the competitive paradigm are daunting. Although a handful of regions will see strong population growth, for most great powers, the coming decades herald a period of living with substantial constraints on a traditional source of economic growth, productivity, and national power and facing potentially severe fiscal headwinds from rising dependency ratios. This trend will create a fundamentally different socioeconomic context for competition than most earlier periods of significant population growth and will challenge great powers to sustain economic growth and social cohesion. As

¹ Bloom and Zucker, “Aging Is the Real Population Boom”; Tertrais, “The Seven Demographic Trends That Will Determine Our Global Future.”

² For a recent update on this trend for the United States, see Kearney, “America’s Shrinking Population Is Here to Stay.”

³ Goodheart and Pradhan, *The Great Demographic Reversal*.

⁴ Eberstadt, “With Great Demographics Comes Great Power”; Eberstadt, “America Hasn’t Lost Its Demographic Advantage.”

family size decreases, human capital spending for the fewer remaining children often increases, especially among the middle and upper classes. As life expectancies increase, the stagnant or shrinking population of workers will need to support and care for a growing cohort of retirees who will live longer than in past generations. This trend will place special pressure on state finances and the ability of great powers to fund instruments of power while still meeting the medical and economic needs of a rapidly aging population.⁵

Another, more subtle demographic pattern could also be reshaped by this trend. Historically, one explanation for the rapid economic development of Britain and the Netherlands during the early modern period and the emergence of the industrial revolution in Britain was that these regions were unusual for their adherence to a relatively unique European marriage pattern. This pattern, replicated in the Americas and other settler colonies, was predicated on couples getting married at a relatively late age (late teens or twenties) and then setting up their own household as a nuclear family. This allowed for relatively more financially secure couples to create and manage their own households that could be agile to the demands of the market rather than being dictated by the strictures of a family patriarch. It also might have made Northern Europe and its affiliated colonies more agile than regions in which couples were expected to remain a part of a larger, multi-generational household.

Although this pattern might no longer be relevant to growth, it does demonstrate the important ways in which demographic patterns shape the long-term trajectories of the economies that they give structure to. Thus, beyond the issue of declining and aging workforces, the restructuring of households to care for aging parents, adult children returning home to avoid an increasingly expensive housing market, or increasing risk aversion because of these and other factors might cause future households to act much differently than past generations.

An era of impaired effectiveness and legitimacy of social institutions, especially institutions of governance. One of the leading elements of the emerging era is both actual and perceived declines in the effectiveness and legitimacy of major social institutions, both public and private. The essential issue is performance: There is objective evidence that public and private institutions have become less able to achieve their goals over time.

This is true globally in important ways: The perceived effectiveness and, in some cases, legitimacy of governments is under assault in Europe, parts of the developing world, even China. It is clearly true of the United States. As long ago as 1994, the writer Jonathan Rauch noted that “the American government’s capacity to solve problems appears to have sharply diminished since the 1960s,”⁶ but similar trends appear in the private and nongovernmental sectors. Factors related to this trend, at least in the United States, include the following:

- As the first-phase study of this project showed, bureaucratic-administrative bloat has grown and accompanying policy processes have calcified.⁷
- Partly as a result, the costs of public infrastructure and other investment programs have grown significantly, producing a decline in efficiency.⁸ The growing costs of all public activity

⁵ For a recent example, see “Excess Deaths Are Soaring as Health-Care Systems Wobble.”

⁶ Rauch, *Demosclerosis*, p. 5.

⁷ Mazarr, *The Societal Foundations of National Competitiveness*, pp. 275–281.

⁸ McArdle, “From the Hoover Dam to the Second Avenue Subway, America Builds Slower.”

combined with the fiscal pressure of federal entitlement programs and interest on a rising debt mean that a nation that is substantially wealthier than in the 1930s and 1940s feels constrained from making forward-looking investments of the same scale as the United States undertook in those decades.⁹ When massive federal spending is triggered into action, it is typically in response to a crisis and has the purpose of avoiding economic collapse rather than building the foundations for future growth and stability.

- As Rauch documented (building on Mancur Olson’s famous work on interest group accretion in stable democracies), the influence of hundreds of issue-specific interest groups, which he terms *hyperpluralism*, leads to a dizzying web of rules, regulations, preferences, and other requirements. The result is that “Government loses its capacity to experiment and so becomes more and more prone to failure.”¹⁰ One example is in information technology. Fully 94 percent of federal information technology projects from roughly 2003 to 2013 failed: “More than half were delayed or over budget and 41.4 percent failed completely.”¹¹ In 2023, the U.S. Department of Defense announced that a long-awaited replacement for its infamous Defense Travel System portal, the MyTravel system (a \$374 million endeavor that had been in development for five years), was being abandoned altogether.¹²
- These trends mean that these systems come to function as mechanisms for compromises or battles among competing elites rather than processes designed to rationalize views and policies for the common good.¹³ This trend is reflected, for example, in the decline of participatory community and advocacy organizations in favor of bureaucratic-technocratic organizations staffed by professional advocates.¹⁴
- The U.S. Congress has become less able to make policy.¹⁵ One investigation by the *Washington Post* and ProPublica investigation surveyed lawmaking, procedural issues, and the role of various actors in congress and concluded that the era of the legislative branch hammering out compromises on major issues “is effectively dead. It has been replaced by a weakened legislative branch in which debate is strictly curtailed, party leaders dictate the agenda, most elected representatives rarely get a say and government shutdowns are a regular threat due to chronic failures to agree on budgets.”¹⁶ For example, one measure included in the study revealed that the number of hearings devoted to a detailed analysis of legislation declined from 937 in the House of Representatives and 500 in the Senate in 1989–1990 to 254 in the House and 69 in the Senate by 2015–2016. The proportion of Senate business devoted to personnel issues, such as confirming appointees, has ballooned from 4 percent in the late

⁹ Rauch, *Demosclerosis*, pp. 150–151.

¹⁰ Rauch, *Demosclerosis*, p. 17.

¹¹ Micklethwait and Wooldridge, *The Fourth Revolution*, p. 20.

¹² Serbu, “DoD Suddenly Abandons \$374 Million Plan to Replace Defense Travel System.”

¹³ Habermas, *Legitimation Crisis*, pp. 123, 74.

¹⁴ Skocpol, *Diminished Democracy*; Stenling and Sam, “Professionalization and Its Consequences.” This phenomenon is not universal; in some cases, a combination of actively engaged members and supportive professionals can be an effective pair (Heylen, Willems, and Beyers, “Do Professionals Take Over?”).

¹⁵ For a general assessment of the decline of the legislative branch, see Mann and Ornstein, *The Broken Branch*.

¹⁶ Willis and Kane, “How Congress Stopped Working.”

1980s to 55 percent in 2016. Partly, the trend reflects the decline of the power of committees in favor of centralized power in the hands of congressional leadership alongside the increasing use of procedural measures to pass legislation.¹⁷ As another analysis concluded, “The American Congress has not passed a proper budget on time since 1997. Belgium spent 541 days without a government in 2010–2011. The Western state is in the throes of a midlife crisis.”¹⁸

- The scale of regulatory structures in the United States has grown steadily over time. By 2000–2010, the *Federal Register* was expanding by 73,000 pages per year, six times the speed of the 1950s. The number of U.S. citizens who require licenses to do their jobs ballooned from 5 percent in the 1950s to over 30 percent in 2014.¹⁹
- In the private sector, as documented in the first-phase study, similar developments have led to declines in the levels of productive investment as opposed to stock-price focused activities, such as stock buybacks.

A critical implication of this trend is that, in the public sector, the room for experimentation and the broader flexibility and adaptiveness of government has narrowed considerably. Rauch notes that Franklin Roosevelt experimented with multiple federal programs during the depression and World War II, many of which wound down when their immediate purpose had been fulfilled. “In a society dense with professional lobbies,” he contends, “FDR’s brand of experimental central government *cannot exist*.” Once programs are in place, they attract crowds of supporters and lobbies and become impossible to end. The U.S. government today lacks “the flexibility to fail, adjust, and try again.”²⁰ These trends and realities will manifest themselves differently in different countries, but many of the basic themes appear to be global.

Part of this challenge is that the bureaucratic instruments of the industrial age—described by Weber as indispensable to steering complex societies—have become overburdened with mass, rules, regulations, certification requirements, and a dozen other sources of calcification and stagnation. This is especially problematic because, as Haberman notes, they have come to operate independently of popular participation and, thus, can only gain legitimacy through performance.²¹ This tends to move toward unresolvable dilemmas: an expectation that technocratic planning will reliably manage problems versus a consistent skepticism and resistance to planning. This leads to a crisis in the rational-technocratic basis for societies reliant on such steering mechanisms, in part because many of the challenges societies confront—crime, inequality, poverty, health care—are simply too complex to be managed by technocratic solutions. Habermas referred to this, in part, as “the rationality deficit of an overloaded administration.”²²

As a result, public perceptions of the effectiveness and legitimacy of social institutions has continued to ebb. In the first-phase study, we surveyed a good deal of the evidence for this trend, and

¹⁷ Yeatman, “The Decline of Lawmaking Reflects a Diminished Congress.”

¹⁸ Micklethwait and Woolridge, *The Fourth Revolution*, p. 228.

¹⁹ Micklethwait and Woolridge, *The Fourth Revolution*, p. 117.

²⁰ Rauch, *Demosclerosis*, pp. 145–146.

²¹ Habermas, *Legitimation Crisis*, p. 36.

²² Habermas, *Legitimation Crisis*, p. 65.

it has generally continued. Table 1 displays the findings of one recent survey, which include the lowest numbers ever recorded in the July 2022 annual Gallup poll. Many other recent surveys and studies generated about the same results.²³ Although polling on these issues was less comprehensive before the 1980s, these figures represent a dramatic decline from postwar highs. The proportion of U.S. citizens who trusted the government “to do what is right just about always or most of the time” ran at over 75 percent through the mid-1960s.²⁴ In many ways, however, the trend is not at all new—even by the late 1970s pollsters were marveling at the dramatic decline in trust and faith in institutions.²⁵

Table 1. Confidence in Major U.S. Institutions, 2022

Institution	Confidence Level
Military	64%
Police	45%
Organized religion	31%
Banks	27%
Supreme Court	25%
Presidency	23%
Criminal justice system	14%
Big business	14%
Television news	11%
Congress	7%

SOURCE: Jones, “Confidence in U.S. Institutions Down; Average at New Low.”

Globally, the Edelman Trust Barometer provides perhaps the most comprehensive survey data on social trust and faith in institutions with over 30,000 respondents in 28 countries.²⁶ The reliability of results in different contexts can be disputed, although these sorts of surveys at least provide a starting point for understanding popular perceptions. Numbers for trust in institutions are somewhat better in many other countries than the United States but have still declined in recent decades. About half the respondents showed trust in government institutions, but the numbers were much lower in key countries. More respondents (46 percent) said that governments were a source of false and misleading information more than a reliable source of trustworthy information (39 percent). Only 41 percent of respondents trusted government leaders. Although it might be an artifact of polling in a closed society,

²³ See, for example, Pew Research Center, “Americans’ Views of Government.”

²⁴ Pew Research Center, “Public Trust in Government.” The Pew Research Center’s graph makes it difficult to avoid the conclusion that two seminal events of the 1960s and 1970s—the Vietnam War and Watergate—had a disastrous and, in many ways, permanent effect on public faith in government.

²⁵ Lipset and Schneider, “The Decline of Confidence in American Institutions.”

²⁶ These figures are from the most recent, 2023 Edelman report (Edelman, *2023 Edelman Trust Barometer*). See, also, OECD, “Trust in Government.”

China displayed remarkably high trust numbers: an overall trust index of 90 percent for higher-income Chinese respondents and 71 percent for lower-income Chinese respondents—both the top figures for all countries polled and each about 30 points ahead of the comparable U.S. figures. Some of the varying rates of trust in international institutions, as determined by the Edelman Trust Barometer, include the following:

- Trust in government:
 - Worldwide: 51%
 - China: 89%
 - Singapore: 76%
 - United States: 42%
 - Japan: 33%
 - South Africa: 22%
 - Argentina: 20%
- Trust in media:
 - Worldwide: 50%
 - China: 79%
 - India: 62%
 - United States: 43%
 - United Kingdom: 37%
 - Japan: 34%
 - South Korea: 27%
- Overall Trust Index
 - Worldwide: 56%
 - China: 83%
 - India: 73%
 - Mexico: 61%
 - Netherlands: 54%
 - United States: 48%
 - Germany: 46%.

This trend is intertwined with and mutually reinforced by a closely related one—the loss of faith in the U.S. system (and, indeed, many hallmarks of modernity) by a significant part of the U.S. population. The same is true globally: The 2023 Edelman Trust report connects declining trust and faith in institutions to rising fear, anxiety, and polarization. The United States emerges, by several measures, as one of the most polarized countries in the survey alongside Argentina, South Africa, Spain, and Sweden. China is one of the least polarized.

This trend's leading implication for the emerging competitive paradigm is the degree to which it complicates, and in some cases paralyzes, the capacity for effective policymaking while fracturing the

shared identity of a nation. Such declining faith in institutions is associated with rising polarization, a secular trend that has been underway for half a century.²⁷ Lack of faith that governing institutions can solve problems produces “a constant feeling of frustration and fear,” which leads to “a toxic and unstable mixture: dependency on government on the one hand and disdain for government on the other.”²⁸ U.S. citizens widely agree with the claim that low levels of trust and faith in institutions complicate the process of solving national problems,²⁹ and there is growing evidence to support this connection.³⁰ A very substantial literature has demonstrated the importance of social trust to both governance effectiveness and the long-term health of democratic institutions.³¹ There is some evidence that the trend is self-reinforcing—declining trust in institutions becomes a cause of generalized dissatisfaction with social and political realities in addition to reflecting those realities.³² States and societies that deal with this trend most effectively, generating sufficient social faith and trust for higher-quality governance, will have a competitive advantage.

Persistently high and possibly rising rates of stress, alienation, anxiety, and mental health issues.

Developed societies are showing many symptoms of population-wide anxiety, such as deaths of despair, rising mental health issues for students and associated challenges for educators, a rise in the appeal of conspiracy theories. One product of this trend is rising tribalism: The Global Trends 2040 report draws attention to this specific issue, writing, “communities are increasingly fractured as people seek security with like-minded groups based on established and newly prominent identities; states of all types and in all regions are struggling to meet the needs and expectations of more connected, more urban, and more empowered populations.”³³ These trends intensified during the COVID-19 pandemic. The World Economic Forum’s *Global Risks Report 2022* notes that societal risks “in the form of ‘social cohesion erosion,’ ‘livelihood crises’ and ‘mental health deterioration’ . . . have worsened the most since the pandemic began.”³⁴

Trends Shaping the Competitive Paradigm: Global Networks of Power and Influence

A second set of trends shaping the competitive paradigm reflect emergent realities in global interdependencies, vulnerabilities, and hubs of power and influence. Especially given the growing pressures of partial decoupling from Chinese supply chains and finance and the lingering effects of COVID-19 supply disruptions, the requirements for competitive advantage are changing from an enthusiastic embrace of globalization and open trade and dependencies on foreign suppliers to a more

²⁷ Brady and Kent, “Fifty Years of Declining Confidence and Increasing Polarization in Trust in American Institutions.”

²⁸ Micklethwait and Wooldridge, *The Fourth Revolution*, pp. 230, 261.

²⁹ Rainie, Keeter, and Perrin, “Trust and Distrust in America.”

³⁰ Thomson-DeVeaux and Qamar, “What Happens When Americans Don’t Trust Institutions?”; McGrath, “Beyond Distrust.”

³¹ Fukuyama, *Trust*.

³² Hetherington, “The Political Relevance of Political Trust.”

³³ National Intelligence Council, *Global Trends 2040: A More Contested World*.

³⁴ World Economic Forum, *The Global Risks Report 2022*, p. 7.

nuanced model—one that strikes a balance between the competitive value of participating in networks of trade and exchange and the vulnerabilities of relying on international sources of essential goods.

The overarching trend reflected in many of these specific elements is what one study has referred to as *flow security*. The study suggests that,

In a hyper-connected world, which is characterized by a partial breakdown of the multilateral system, the ability to influence or control flows is key to new coercive strategies. In the information age, worldwide flows not only pertain to the physical trade of energy, commodities, and products, but also to the digital exchange of money, data, and ideas.

The report quotes French President Emmanuel Macron, who has argued that,

Managing tangible and intangible resources and flows is key to new power strategies. The high seas, air space and outer space and the digital realm, common spaces that interpenetrate each other and complicate our understanding of the issues, are becoming or are once again arenas for power struggles and at times, confrontation.³⁵

Each of the components of networked interdependence outlined below reflects one form of these flows; promoting national interests, resilience, and autonomy in this context is a major competitive challenge.

Growing role for nonstate actors. One widely discussed trend of the last half century is the role of nonstate actors in generating outcomes on the global stage, and there are reasons to believe that such actors will have even greater influence in the coming 30 to 50 years. This trend is not the same as arguing for the end of the nation-state, the gradual ebbing of state sovereignty in the face of globalizing trends. Indeed, that trend, to the extent it had momentum, has now given way to arguments for the exercise of greater state sovereignty to protect citizens from certain excesses of globalization. But, at the same time, even as state authorities flex their muscles relative to flows of capita, investment, and production, certain nonstate actors have gained important influence and look set to continue to play important independent roles. These actors include private firms, especially in the high-technology sector; activist and advocacy groups, especially ones that cross borders to achieve worldwide influence; and hacker collectives, which can impose significant costs on nation-states.

Interdependent supply chain networks: balancing network centrality, competitive advantage, and vulnerability. The first-phase study emphasized the competitive advantage conferred on nations that establish themselves as the hubs of critical networks of exchange—of trade, ideas, finance, and people. This remains true, but the past decade has increasingly emphasized the importance of a countervailing trend: the competitive risks of dependency on such networks. Challenges of supply chain instability, vulnerability to economic sanctions applied to trade and finance networks, and more-pointed forms of “weaponized interdependence”³⁶ have highlighted the risks of networked dependencies.

There is no single metric for gauging the degree of national dependency on global supply chains,³⁷ but several figures help to convey the significance of the trend. One study took the auto industry as an

³⁵ Verhagen, Chavannes, and Bekkers, *Flow Security in the Information Age*, p. 7.

³⁶ Farrell and Newman, “Weaponized Interdependence.”

³⁷ For a general survey of the rise of offshoring of intermediate goods, see Torsekar, “Intermediate Goods Imports in Key U.S. Manufacturing Sectors.”

example and noted that direct U.S. bilateral dependency on parts from China is not a sufficient indicator—indirect dependencies from third countries that also depend on Chinese imports must be included. Taking this broader measure, the value of Chinese intermediate parts was 20 percent of total U.S. auto industry output in 2015 and growing.³⁸ During the COVID-19 pandemic, the issue of medical supply chain interdependency emerged as an area of risky dependency: Some studies suggested that 80 percent of the components of many critical drugs are sourced from China and India.³⁹ Another well-known area of important dependency is rare metals: The European Union, for example, relies on imports for between 75 percent and 100 percent of these critical manufacturing components.⁴⁰

The importance of renewable forms of energy—a parallel trend outlined below—will, in some ways, exacerbate the competitive risks of interdependencies. Batteries and other components of electric cars and other forms of renewable powered electrification rely on such minerals as copper, cobalt, nickel, lithium, and rare earth elements that are heavily sourced from China and will constitute a new form of networked vulnerability.⁴¹

It is important not to exaggerate the overall vulnerability created by current levels of supply chain interdependence, especially for the United States.⁴² Overall U.S. trade dependence is lower than for many advanced and developing powers, and the past several years have shown the resilience of supply chains as much as their weaknesses. Still, these trends show how much nations' economic, technological, health, and social dynamism can be threatened by shortfalls and instabilities in supply chains and other networks. The implication for the emerging competitive paradigm is straightforward: We are entering a new era in managing national dependencies,⁴³ one in which nations will need complex, nuanced, and well-funded strategies for preserving their autonomy and resilience while gaining the advantages of serving as the hubs of networks of exchange.

Integrated, increasingly digital global financial networks. A second form of global networks with rising importance is in finance and, particularly, digital finance. The coming decade is likely to see a substantial growth in the role of digital central bank currencies, in part because China has a major strategy to establish a digital yuan as a leading global mode of exchange.⁴⁴ Many economists expect physical cash to disappear by the 2030s. One recent estimate suggests that over \$2 trillion in digital currencies were in circulation by early 2022; over 30 countries have developed or are developing

³⁸ Freeman and Baldwin, "Trade Conflict in the Age of COVID-19." One shorter-term measure of instabilities in supply chains is the New York Federal Reserve Bank's global supply chain pressure index, which aggregates several measures of trade instability to an overall indicator (Federal Reserve Bank of New York, "Global Supply Chain Pressure Index [GSCPI]"). This index finds relative equilibrium from 1998 all the way through January 2020, with relatively small deviations (between -0.1 and +0.1) around a mean until the global supply crisis caused by COVID-19, which produced spikes of supply chain pressures of 3 to 4 on the same scale.

³⁹ Huang, "The Coronavirus Outbreak Could Disrupt the U.S. Drug Supply."

⁴⁰ Wrede, "Can the EU Do Without Metals from China?" See, also, Burke et al., *Critical Minerals*.

⁴¹ Leruth and Mazarei, "Who Controls the World's Minerals Needed for Green Energy?"; Castillo and Purdy, "China's Role in Supplying Critical Minerals for the Global Energy Transition"; International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions*.

⁴² Manak and Kolas, "Supply Chains and Interdependence: Is This Really a Problem That Needs Solving?"

⁴³ Shih, "Are the Risks of Global Supply Chains Starting to Outweigh the Rewards?"

⁴⁴ Prasad, *The Future of Money*.

central bank digital currencies and dozens more are investigating the potential for one.⁴⁵ Research by the IMF suggests that once the credibility of digital forms of payment becomes widely established, the transition to such forms of payment could be rapid.⁴⁶

Central bank digital currencies have important domestic roles and effects, but, from the standpoint of the emerging competitive paradigm, their most important implication might be in the international financial, banking, and investment patterns they create. Nations can gain advantage by becoming the centerpiece digital currencies of this new era, perhaps generating a degree of dependence and influence greater than existing reserve currencies because of the difficulty of extracting a nation from an established digital network. It is not clear what precise forms this competition will take, but mastering its demands and potential will be a major source of competitive advantage.

A competition in digital information infrastructures. A related systemic trend (and, ultimately, contest) involves parallel and competing efforts to build and, to some degree, control the DIs of countries, especially developing nations. DIs encompass many components of the information architecture of nations: national components, including “wireline and fiber-optic networks and the information infrastructure these networks link, including data centers, cloud computing infrastructure, personal computers (PCs), and other user devices”; cellular network components, such as “wireless network infrastructure, including mobile devices”; international connectivity assets, such as submarine cables; and space assets.⁴⁷ The infrastructure is governed by rules, norms, standards, and institutions, and influence over these is another area of competition.

Until recently, those infrastructures and their associated rules and institutions were dominated by U.S. and allied firms from Europe and Asia, but China is making inroads through funding provided by its Digital Silk Road (a subset of the Belt and Road Initiative) and the offerings of private companies, such as Huawei.⁴⁸ China’s massive integrated information firms—combining social media, digital payment, online shopping, and other features (such as Alibaba and Tencent) are also furthering these inroads.⁴⁹ When dealing with undemocratic regimes, Beijing also offers surveillance, information monitoring and control, and related technologies. Indeed, one RAND study concluded that China views this domain as a leading source of advantage:

[J]ust as the United States views overseas military presence as a strategic means to compete and deter, so too does the People’s Republic of China (PRC) view DI as a strategic means for competition..... China’s strategy for achieving long-term strategic goals appears to be heavily—although by no means exclusively—focused on using and exploiting DI.⁵⁰

In an information-dominated age, the countries and firms that become the default providers of major components of DI will have a major advantage. DIs are also closely related to the trade and

⁴⁵ Yan and Ziyang, “3 Ways Digital Currencies Could Change Global Trade.”

⁴⁶ Adrian and Griffoli, “The Rise of Digital Money.”

⁴⁷ Brackup, Harting, and Gonzales, *Digital Infrastructure and Digital Presence*, p. 6.

⁴⁸ Hillman, *The Digital Silk Road*; Keane and Yu, “A Digital Empire in the Making.”

⁴⁹ Chorzempa, *The Cashless Revolution: China’s Reinvention of Money and the End of America’s Domination of Finance and Technology*.

⁵⁰ Brackup, Harting, and Gonzales, *Digital Infrastructure and Digital Presence*, p. v.

supply chain interdependencies discussed above—for example, information processing systems for ports and railways and airfields—and best-in-class providers can gain substantial influence over the transportation infrastructure of developing nations.⁵¹ DIs can display significant first-mover and major investment tendencies, meaning that countries or firms that obtain initial advantage in a market, partly through state subsidy, can lock in their presence for long periods.⁵²

Trends Shaping the Competitive Paradigm: Economy

The third basket of trends shaping the emerging competitive paradigm has to do with the basic sources of economic growth, productivity, and innovation, including the most-significant areas of technological advance. Some would argue that these are the centerpiece of any paradigm—as they were in the industrial and information paradigms, for example—because they offer the basic fuel for other forms of competitiveness.

The long-term, secular decline of growth and productivity rates in advanced economies. This is a widely remarked on trend whose sources are the subject of intense debate.⁵³ Overall growth is a function, in part, of labor force and productivity growth, both of which have stalled or reversed in recent years.⁵⁴ National priorities have shifted away from maximizing growth—for good reasons, ecological and otherwise, but in ways that deemphasize policy actions that would be required to promote it.⁵⁵

Research on economic history and patterns of economic development and industrial growth provide an additional perspective on the epochs that divide economic development into distinct periods that are qualitatively different from one another and produce independent and variable effects on the rates of economic growth and development. Since the 1950s, when Nobel Laureate Robert Solow introduced his eponymous growth model, economists have largely treated growth as a continuous process that will continue smoothly and indefinitely. More-recent studies have argued that growth is, in fact, discontinuous and that the recent period of rapid development might be a one-time aberration unless new sources of transformational development are found to fuel additional waves of development. This theory reinforces much current evidence and commentary that, in the coming decades, growth will be unevenly distributed across the world and might slow dramatically in developed economies.

Viewed through a historical lens, the existence of distinct periods of growth and development is clear. Through much of history, growth rates were so slow that development was not noticeable from one generation to the next.⁵⁶ This pattern changed in Western Europe as the economy became more

⁵¹ Yeoh and Dingding, “China-US Competition.”

⁵² Hanspach, “Internet Infrastructure and Competition in Digital Markets.”

⁵³ Vollrath, *Fully Grown*; Jones, “The End of Economic Growth?”; Reza and Sarker, “Is Slower Growth the New Normal in Advanced Economies?”; Arsov and Watson, “Potential Growth in Advanced Economies”; Akcigit and Ates, “What Happened to U.S. Business Dynamism?” For a discussion of the lessons of one sector for the overall issue, see Klein, “The Story Construction Tells About America’s Economy Is Disturbing.”

⁵⁴ Dieppe, “The Broad-Based Productivity Slowdown, in Seven Charts”; Moss, Nunn, and Shambaugh, “The Slowdown in Productivity Growth and Policies That Can Restore It”; Baquer and Salmeron, “Why Productivity Growth Is Declining.”

⁵⁵ “How the West Fell Out of Love with Economic Growth.”

⁵⁶ Ladurie, “Motionless History.”

market oriented. By the 17th century, there were an increasing number of institutions that facilitated investment and entrepreneurship. In parallel to this, households and consumers became more consumption oriented and began to use their new monetary wealth to buy the new consumer goods that were becoming available.⁵⁷

Rather than a single, continuous post-1750 process of industrial revolution, recent research highlights at least three distinct revolutions that played out sequentially.⁵⁸ As Robert Gordon has argued, the first revolution, occurring between roughly 1750 and 1830, produced increasing rates of growth by the development of the steam engine and its use in industrial tasks and the development of the railroad. This was followed by a second industrial revolution that revolutionized the lives of consumers: Between 1870 and 1900, a host of developments in fields including electricity, internal combustion engines, running water, indoor toilets, communications, entertainment, chemicals, and petroleum transformed everyday lives. Finally, since about 1960, a third revolution in computers and information technology has fueled a third wave of development.

In each case, the relatively narrow period of revolutionary development fueled a dramatic boom in growth as the developments that composed it became widespread. Yet the technological advances driving the revolutions produced a one-time economic transformation the widespread adoption of which fueled a unique period of dramatic growth as the technologies became widespread. The implication is that, rather than viewing economic growth as an inevitable and continuous process, economic growth might instead require relatively rare bursts of transformative development to cause economies to deviate from their baseline state of economic stagnation.

A symptom of this, visible in modern economies, is a phenomenon stressed in the first volume of this project: the large volume of corporate profits that cannot be effectively redeployed into productive R&D. Thirteen major U.S. corporations, for example, each have \$1 trillion or more in cash reserves.⁵⁹ Even though these firms are largely technology firms, they have each found that their research and development initiatives cannot scale sufficiently to productively reinvest their cash on hand. As a result, they find themselves stockpiling it and distributing it to investors through stock buybacks and dividends.

This, in microcosm, is the issue facing industrialized economies. Although wealthy, nations are limited in opportunities to invest in future growth. At the economy-wide scale, this limitation suggests that the future will likely be characterized by relative economic stagnation rather than the rapid transformations in living standards seen in the 20th century.

The issue is complex, and not all analysts expect the recent growth and productivity slowdown to last.⁶⁰ But most forecasts argue that key contributing factors (such as shrinking workforces) are structurally unavoidable, and the majority view expects some version of the secular stagnation to continue during the period assumed here.⁶¹ If it does, long-term slow growth will have several major implications for the competitive position of nations. One is that differential growth rates might cease

⁵⁷ De Vries, *The Industrious Revolution*.

⁵⁸ Gordon, “Is U.S. Economic Growth Over?”

⁵⁹ Krantz, “13 Firms Hoard \$1 Trillion in Cash (We’re Looking at You Big Tech).”

⁶⁰ Bergeaud, Cette, and Lecat, “Long-Term Growth and Productivity Trends.”

⁶¹ Giles, “Global Economy Set for Years of Weak Growth, IMF Chief Kristalina Georgieva Warns.”

to be a major distinction among competitors—but this is only if China’s growth continues to slow into the range of the advanced economies. The trend will also demand changes in attitudes on the part of populations that have become accustomed to measuring national success, in part, by GDP growth and that have come to rely on the accompanying rise in per-capita income.⁶² It could create new challenges for the legitimacy of governments that can no longer justify themselves through economic performance, a trend that appears to be underway already.

Closely tied to this trend is a related socioeconomic reality: significant and growing levels of wealth and income inequality within especially developed states, which are now perceived as serious roadblocks to individual empowerment. In the first-phase study, we reviewed the work of historian Walter Scheidel. His assessment of various historical eras suggests that, during periods of relative long-term stability, powerful interests in society capture an increasingly large share of national resources, leading to persistent and irreversible rises in inequality.⁶³ If his analysis continues to hold through the emerging paradigm, nations will have to deal with the social strains and crises associated with populist outrage at an entrenched new Gilded Age.

Managing the transition to a post-fossil fuel economy. A second economic trend is the massive shift in energy sources underway because of the need to transition to a low-carbon economy. The first-phase study noted that some historians believe that energy capture and employment has been a critical variable in the competitive fates of societies, and this factor is emerging as an important trend in the 21st century because of the transition to a new energy foundation for advanced societies. Nations that lead in the development of renewable energy technologies and begin shifting their sources of energy more quickly are likely to gain a competitive advantage.⁶⁴ One reason is the price-shock vulnerability of countries that are heavily dependent on imported sources of energy that are subject to international supply disruption or coercive boycott.

Just how quickly this transition can or will take place is the subject of intense debate.⁶⁵ The issue for the competitive paradigm is that the particular countries that manage to dominate the technologies, techniques, and systems will have a major competitive advantage. This is true for several reasons: the central role of reliable energy supplies in a substantial and growing share of global economic activity,⁶⁶ the dangers of dependence on foreign supplies of energy,⁶⁷ and the potential of a decentralized renewable energy system to enhance resilience. In recognition of these facts, China has made tremendous investments in renewables, including efforts to dominate key parts of an

⁶² Burgess et al., “Prepare Developed Democracies for Long-Run Economic Slowdowns.” As they note (pp. 1608–1609), “[m]any aspects of modern socioeconomic systems rely on long-run growth. Certainly, modern socioeconomic systems have not exited under any other regime.”

⁶³ Scheidel, *The Great Leveler*.

⁶⁴ Nahm, “Clean Energy Technology and U.S. Industrial Policy.” See, also, Nahm, *Collaborative Advantage*.

⁶⁵ In 2001, International Energy Agency published one widely cited model for achieving such a transition. See International Energy Agency, *Net Zero by 2050*. For a general survey of the challenge, see Meredith and Handley, “It Is Entirely Doable, and It Is Doable Fast.”

⁶⁶ McKinsey & Company, *Energy*.

⁶⁷ An example is the German dependence on Russian oil and gas and the economic disruptions caused in the shift away from them (Chazan and Nilsson, “Germany Confronts a Broken Business Model”).

increasingly electric-based future,⁶⁸ and other countries, including the United States,⁶⁹ have seen energy transition competitiveness as a major national priority as well.⁷⁰ The issue of clean energy finance to developing countries might also become an increasing focus of competition.⁷¹

Growing importance and threats from biological technologies. We list this third trend in the economic section even though it also has national security implications. The coming decades are likely to see dramatic advances in many areas of biological science and technology, such as genetic therapies, biosystems (cultured meat), and bio machine interfaces. Biological innovations have direct manufacturing implications—bio-engineered goods, including fuel, could make up over half of the physical inputs to global economic activity.⁷² These emerging capabilities can provide numerous sources of national competitive advantage,⁷³ and, partly for this reason, China is making huge investments in the area.⁷⁴ Some have expressed doubts about just how rapid or transformative the outputs of this research are likely to be, especially in medical applications,⁷⁵ but it is clear that this industry will play an important role—increasingly overlapping with information technology—in forming the basis for the manufacturing economies of the future.

Rising levels of public and private debt. Another major trend is the continual growth in global debt by many measures and the potentially severe constraints that will begin to emerge on nations' fiscal running room because of growing debt servicing requirements and higher costs of additional debt issues. In global terms, debt reached \$226 trillion in 2021, a new high.⁷⁶ Global debt as a proportion of GDP in various categories fell somewhat in 2021, a product of several factors, including postpandemic rises in GDP and inflation. Total world debt declined 10 percent—but still sat at 247 percent of world GDP, or \$235 trillion. The decline is also somewhat less impressive because, the year before, world debt grew faster than at any time in history—by 29 percent of world GDP in a single year.⁷⁷

For the United States, gross U.S. federal debt as a percentage of GDP has ballooned from under 35 percent for much of the 1970s to 55 percent in 2000 to 82 percent in 2010 to a staggering 127 percent by 2020 before falling off slightly in 2021.⁷⁸ The latest Congressional Budget Office projections suggest that federal deficits between 2022 and 2052 will “average 7.3 percent of GDP (more than double the average over the past half-century) and generally grow each year, reaching 11.1 percent of GDP in 2052. Net interest outlays more than quadruple over the period, rising to 7.2

⁶⁸ Tsafos, “China’s Climate Change Strategy and U.S.-China Competition”; Murray et al., “The United States, China, and the Competition for Clean Energy.”

⁶⁹ Brower and Chu, “The U.S. Plan to Become the World’s Cleantech Superpower.”

⁷⁰ Kim, “National Competitive Advantage and Energy Transitions in Korea and Taiwan.”

⁷¹ Chuyu and Urpelainen, “Why the United States Should Compete with China on Global Clean Energy Finance.”

⁷² Chui et al., “The Bio Revolution”; OECD, *The Next Production Revolution*.

⁷³ Fedasiuk, “Regenerate.”

⁷⁴ Connors, “How China May Soon Lead the Bio-Revolution.”

⁷⁵ Nightingale and Martin, “The Myth of the Biotech Revolution”; McCarty, “What Happened to the Biotechnology Revolution?”

⁷⁶ Gaspar, Medas, and Perrelli, “Global Debt Reaches a Record \$226 Trillion.”

⁷⁷ International Monetary Fund Fiscal Affairs Department, *2022 Global Debt Monitor*, p. 1.

⁷⁸ U.S. Office of Management and Budget and Federal Reserve Bank of St. Louis, “Gross Federal Debt as Percent of Gross Domestic Product.”

percent of GDP in 2052.” Debt as a percentage of GDP is projected to hit 107 percent of GDP and 185 percent in 2052.⁷⁹

Rising debt can have many economic effects,⁸⁰ but a clear implication for U.S. competitive advantage is the growing cost of servicing a bigger debt and its implications for national flexibility and power. The Congressional Budget Office projects that net interest costs will rise from 9 percent to fully a quarter of all federal outlays between 2019 and 2052, when it will be equal to all discretionary spending, including defense.⁸¹ Another report shows that, even in the medium term, net interest outlays were scheduled (as of May 2022 projection) to equal defense spending by 2029 and then grow gradually larger. The projection suggested annual interest payments of about \$1.1 trillion by 2032.⁸² A United States devoting ultimately a quarter of its budget to debt servicing requirements would have far less flexibility to respond to crises or invest in emerging capabilities—a serious handicap in an era of high levels of uncertainty (as we argue below).

Habermas includes a “crisis in public finances” among the sources of his concept of a legitimacy crisis for late-industrial governance. Habermas forecasts the essential dynamic: Societies trying to earn legitimacy through often economically founded performance and providing technocratic solutions to numerous challenges would face irresistible pressure to exceed their financial limits to offer sufficient well-being to their populaces—based on demands they place on themselves. The result is an intensifying cycle of growing demands and overspending. This trend is related to the loss of tradition and cultural normative values: “The less the cultural system is capable of producing adequate motivations for politics, the educational system, and the occupational system, the more must scarce meaning be replaced by consumable values.” Public budgets, he noted, would bear numerous costs: support for strategic industries and investments in such common causes as space travel, infrastructure, social welfare, and environmental remediation. This would trend in the direction of “a systematic overloading of the public budget.” Critically, the result is that debt rises and fiscal flexibility declines even as challenges intensify, so that “the scope for action contracts precisely at those moments in which it needs to be drastically expanded.”⁸³ This is precisely what has been occurring with the additional risk that locked-in spending from entitlement programs and interest on debt tends to disenfranchise younger citizens who perceive little ability to control the fiscal priorities of their societies.⁸⁴

Two scholars have offered a way to quantify these constraints in the form of an *index of fiscal democracy*. This calculates the percentage of federal tax receipts that remain after deducting two categories of locked-in spending: mandatory entitlement programs and interest on debt. As they note, in the early 1960s, about 65 percent of federal receipts remained after deducting those two categories. But that proportion fell steadily as mandatory programs and interest payments grew alongside

⁷⁹ Congressional Budget Office, *The 2022 Long-Term Budget Outlook*.

⁸⁰ These effects include suppressing economic growth (Reinhart, Reinhart, and Rogoff, “Public Debt Overhangs”).

⁸¹ Congressional Budget Office, *The 2022 Long-Term Budget Outlook*.

⁸² Congressional Budget Office, *The Budget and Economic Outlook: 2022 to 2032*. Inflation—and associated higher interest rates—will cause future problems, however, by ultimately raising the cost of borrowing for additional or refinanced debt (Neely, “Inflation and the Real Value of Debt”).

⁸³ Habermas, *Legitimation Crisis*, pp. 61–62, 69; consumable values quote from p. 93.

⁸⁴ Steuerle, “Restoring Fiscal Democracy,” p. 34.

recurring tax cuts. By the late 1970s, the index was down to 40 percent, and it continued to fall to about 20 percent around 1990 before temporarily surging back to 40 percent with the economic growth of the 1990s. It then plummeted to below zero around 2008–2009 (that is, all federal spending besides entitlements and interest was in deficit spending) before lurching back to 20 percent around 2013 and then declining consistently again.⁸⁵

Looking forward, the concept of a fiscal index places emphasis not only on current deficits, debt, and entitlements but also the future benefits locked into current laws. Recent estimates suggest that between \$60 trillion and \$100 trillion in unfunded benefits are built into current U.S. law.⁸⁶ Because benefits are hard to retract and taxes hard to raise, this structural imbalance demands massive political will to overcome. Without very significant changes to current benefit structures, the U.S. fiscal democracy index—and fiscal power and flexibility—is set to decline to unprecedented levels.

Eugene Steuerle, one of the designers of this index, ties these results directly to issues of national competitiveness. A declining fiscal democracy index means at least three things. First, nations have “locked the government into promises that, unless broken, would absorb all fiscal resources that almost any conceivable rate of growth could generate.”⁸⁷ The great irony, Steuerle notes, is that the United States is an incredibly rich country in per capita terms (more so than most European countries), and yet its ability to fund major initiatives is declining rapidly.

Second, most spending, including new spending, goes to support interest or entitlement programs focused on the elderly rather than forward-looking investments in education, infrastructure, or R&D. “This, in a phrase,” he concludes, “is budgeting for a declining society.”⁸⁸ Third, the government has gradually less capacity to respond to future crises with fiscal stimulus or other forms of large-scale response.

Trends Shaping the Competitive Paradigm: General and Contextual

Finally, our research identified several more-general trends underway that could have significant effects on the emerging competitive paradigm.

The role of AI, machine learning, autonomy, and automation. This is perhaps the centerpiece of the emerging paradigm—an accelerating rise in the use of AI and related technologies to improve the efficiency and output of other economic activity, the activities of dozens of social domains, and the conduct of military operations.⁸⁹

In economic terms, multiple studies have quantified the potential effect of these technologies on economic performance. Some of these effects include the following:

⁸⁵ Steuerle, “Restoring Fiscal Democracy,” p. 29.

⁸⁶ Edwards, “Federal Debt and Unfunded Entitlement Promises.”

⁸⁷ Steuerle, “Restoring Fiscal Democracy,” p. 28.

⁸⁸ Steuerle, “Restoring Fiscal Democracy,” pp. 28, 31.

⁸⁹ Wright, “How Artificial Intelligence Will Reshape the Global Order.”

- One study found that “AI-related innovations are positively associated with firm growth as firms with AI-related innovations have 25% faster employment growth and 40% faster revenue growth than a comparative set of firms.”⁹⁰
- A McKinsey study of AI’s role in the global economy found that, in the aggregate, AI could deliver \$13 trillion in additional growth between 2020 and 2030. The study suggested that countries that fully capitalized on the technology could outperform slow adopters by as much as 25 percent.⁹¹ The study did make clear that the United States was the world leader in AI at the time and was well equipped, at least in theory, to reap these benefits.
- A PricewaterhouseCoopers study generated similar estimates of almost \$16 trillion in added growth in the world economy by 2030 and a 25 percent boost in GDP for economies that employed these technologies. It forecast disproportionate effects in China and the United States; China gains 26 percent of GDP (or \$7.0 trillion) in added growth from AI and the United States gains 14.5 percent (or \$3.7 trillion), in part because of the higher proportion of the Chinese economy involved in manufacturing activities with immediate AI applications.⁹²
- Although less precise quantitative estimates exist, research suggests that (in part, by automating routinized activities in R&D and, partly, by allowing for the rapid exploration of multiple avenues) AI could significantly enhance innovation pace and outcomes.⁹³

The importance of these effects stems, in part, from their cumulative nature: The relative advantages of these technologies have the potential to build on themselves. The impact on growth could be two to three times higher in 2030 than the differences today.⁹⁴ Nations slow to adopt these tools might quickly find themselves unable to catch up to this steepening curve.

These technologies are also set to revolutionize dozens of social functions and domains. Generative AI technology is already generating profound reactions in the education sphere and might prompt significant changes in the conduct of grading and instruction. AI will become a major adjunct to medical diagnoses and procedures.

AI and machine learning applications are also in the process of revolutionizing military operations.⁹⁵ These effects have begun to be apparent in Ukraine, where integrated reconnaissance and targeting networks powered by AI have provided the Ukrainian military with a significant advantage.⁹⁶ These technologies allow militaries to operate with unprecedented speed and precision, making multiple decisions within the span of time it currently takes to make just one. Combined with systems

⁹⁰ Alderucci et al., “Quantifying the Impact of AI on Productivity and Labor Demand.” See, also, Damoli, Van Roy, and Vertesy, “The Impact of Artificial Intelligence on Labor Productivity”; and Szczepański, *Economic Impacts of Artificial Intelligence (AI)*.

⁹¹ Bughin et al., “Notes from the AI Frontier”; Furman and Seamans, “AI and the Economy.” An earlier Accenture study suggested that AI could double economic growth rates in high-adopting countries by 2035 (Accenture, “Artificial Intelligence Poised to Double Annual Economic Growth Rate in 12 Developed Economies and Boost Labor Productivity by up to 40 Percent by 2035, According to New Research by Accenture”).

⁹² PricewaterhouseCoopers, *Sizing the Prize*.

⁹³ Cockburn, Henderson, and Stern, “The Impact of Artificial Intelligence on Innovation.”

⁹⁴ Bughin et al., “Notes from the AI Frontier,” pp. 3, 22–23.

⁹⁵ Scharre, “AI’s Inhuman Advantage.”

⁹⁶ Ignatius, “How the Algorithm Tipped the Balance in Ukraine”; Weiss and Patt, “Software Defines Tactics.”

capable of rapid effects (including cyber, hypersonic weapons, and cruise and ballistic missiles positioned close to an enemy's territory), this emerging package of technologies holds the potential to paralyze an opponent in the opening hours of a conflict.

In the broadest sense, then, these technologies obviously hold major implications for national power.⁹⁷ The basic lesson for the emerging paradigm is that competing effectively in these fields will be essential to national dynamism and overall competitiveness.⁹⁸

Fragmenting and corrupted information environments. An important trend shaping the context for national success is the decay of information ecosystems under the assault of misinformation and active disinformation along with associated trends, such as the growth of conspiracy theories partly fueled by larger social issues. The issue is not necessarily the prevalence of overtly and intentionally falsified information; various studies have shown that intentional disinformation is a small part of the information diet of most U.S. citizens and in many developed countries.⁹⁹ Instead, information environments are being corrupted by the following several interrelated trends:

- the presence and active circulation of misinformation, which is believed to be true by those spreading it (in relation to claims of stolen elections, health misinformation [especially around the COVID-19 pandemic], and a variety of conspiracy theories)¹⁰⁰
- people's reliance on siloed sources of information that feed their established biases and magnify the extremism of their views
- a proliferation of alternative sources of news and social media platforms that fragment the stream of information coming at citizens and magnify the silo effect¹⁰¹
- political polarization worsening the problem because people crave news—valid or otherwise—that supports entrenched ideological positions.¹⁰²

The result of these various developments is a clear trend in which the information environments or *infospheres* of nations are becoming less reliable in various ways.¹⁰³ One result is the growing importance of perceived versus actual truth and the role of narrative-manipulation campaigns by major actors, including private firms and governments.¹⁰⁴ The active construction of perceived reality and efforts to shape the cognitive space of people in other countries has become a major source of national power in a postmodern information age where truth is a contested public good.

The effect on societies of these trends is becoming more evident. It leads to a situation referred to as *particularized trust*, a growing limitation in social trust to those who think alike.¹⁰⁵ Generalized

⁹⁷ Horowitz et al., “Strategic Competition in an Era of Artificial Intelligence”; Lee, *AI Superpowers*.

⁹⁸ Special Competitive Studies Project, *Mid-Decade Challenges to National Competitiveness*.

⁹⁹ See, for example, Allen et al., “Evaluating the Fake News Problem at the Scale of the Information Ecosystem”; and Fletcher et al., “Measuring the Reach of ‘Fake News’ and Online Disinformation in Europe.”

¹⁰⁰ Suarez-Lledo and Alvarez-Galvez, “Prevalence of Health Misinformation on Social Media.”

¹⁰¹ Stocking et al., “The Role of Alternative Social Media in the News and Information Environment.”

¹⁰² “Fake News Flourishes When Partisan Audiences Crave It”; Mosleh and Rand, “Measuring Exposure to Misinformation from Political Elites on Twitter.”

¹⁰³ Muhammed T. and Mathew, “The Disaster of Misinformation.”

¹⁰⁴ Ronfeldt and Arquilla, *Whose Story Wins*.

¹⁰⁵ Manjoo, *True Enough*, p. 225.

social trust is one of the most important qualities of successful societies, and, to the degree that the corrupted information environment fragments that, it will have serious long-term ramifications for social dynamism and stability. The same information trends have reinforced a growing polarization by allowing highly selective exposure to information and making wild and baseless claims generally available, adding fuel to conspiracy theories.¹⁰⁶ Widespread misinformation can lead to adverse social behavior by citizens acting on incorrect assumptions, as in a pandemic or ecological crisis.¹⁰⁷

These same trends significantly complicate the environment for policymaking. By promoting polarization, undermining the basis of shared facts in society, and deepening mistrust, a corrupted information environment eats away at the preconditions of any broad-based agreement on courses of action and raises the political costs for cooperating with the other side on an issue. Challenges like immigration and entitlement reform become effectively impossible to solve. RAND research suggests that this is true in national security as well.¹⁰⁸

Habermas' concept of legitimization crises has a significant role for the collapse of the information environment. Societies in crisis often face problems with "validity claims constitutive for the cultural reproduction of life" in which "norm systems have lost their relation to truth."¹⁰⁹ The loss of a sense of truth fragments the solidarity-producing aspects of culture and tradition because people can no longer locate themselves in relation to stable elements of their world.¹¹⁰

Intensifying environmental pressure and crises. One of these is driven primarily by global warming and the associated rise in major weather events and environmental stress on many societies over the coming decades. This will take several forms: rising sea levels and pressure on coastal areas; increasing temperatures in some regions with associated threats to human health and rising energy demands; major drought and exhaustion of critical water resources, including rivers and lakes; and increasing frequency of weather crises and shocks.¹¹¹ These and related global environmental costs have already been estimated at over \$650 billion in 2016–2018 alone;¹¹² the National Oceanic and Atmospheric Administration has calculated the single-year cost in the United States for 2018 at \$91 billion.¹¹³ This trend does not presume specific global warming outcomes or even a net calculus of the cost versus potential benefit to some nations or regions of changing weather patterns. It merely identifies an ongoing and worsening stress on nations and societies. The activist Paul Gilding has referred to the

¹⁰⁶ Sunstein, *#republic*.

¹⁰⁷ Pummerer et al., "Conspiracy Theories and Their Societal Effects During the COVID-19 Pandemic."

¹⁰⁸ Williams and McCulloch, *Truth Decay and National Security*.

¹⁰⁹ Pummerer et al., "Conspiracy Theories and Their Societal Effects During the COVID-19 Pandemic."

¹¹⁰ Williams and McCulloch, *Truth Decay and National Security*.

¹¹¹ There is an immense literature on the rising frequency and impact of these environmental events and processes. See, for example, Diffenbaugh et al., "Quantifying the Influence of Global Warming on Unprecedented Extreme Climate Events"; National Centers for Environmental Information, "U.S. Climate Extremes Index Puts Extremes into Historical Context"; and Rennett et al., "Comprehensive Evidence Implies a Higher Social Cost of CO₂." One recent summary surveyed a range of literature and noted many measurable effects of this trend: A rise in billion-dollar-impact extreme weather events in the United States from less than five per year in the 1990s to an average of more than 15 after 2015; significant negative effects on household income and human health surrounding such events, and long-term negative effects on economic growth more generally (The White House, "The Rising Costs of Extreme Weather Events").

¹¹² Research cited in Harmstone, "Five Sectors That Cannot Escape Climate Change."

¹¹³ DiChristopher, "2018 Was Earth's Fourth-Hottest Year on Record, NOAA and NASA Report."

emerging era as “a generations-long crisis that will need to be managed with focus and determination.”¹¹⁴

But the larger trend goes beyond climate change to other ecological issues, such as overfarming and overfishing, species extinction, pollution, and massive amounts of waste. There is no way to be sure if any of these other environmental trends will cause critical impacts in the time frame of this analysis (out to 2040). But it seems inevitable that during that period, the competitive paradigm will embody growing pressure to begin making broader ecological transitions, not only to a post-fossil fuel economy but also to such practices as regenerative farming and closed-loop production and recycling processes. The competitive paradigm will become, at least gradually, more focused on ecological sustainability, and nations that push that transition more quickly could gain various competitive advantages (although a radical shift could affect economic growth in constraining ways).

Intensifying threats to homelands. A closely related trend is the perceived prominence of threats to the well-being and economic security of populations. These stem from several sources. One is the growing set of environmental threats summarized in the previous section. A second is the continuing danger of pandemics, perhaps fueled by engineered bioweapons developed by governments or private actors. A third is threats from beyond the Earth, including asteroid strikes and the risk of solar superstorms that could create havoc in electronic grids and the sustainability of internet connections.¹¹⁵ A fourth is the threat of violence from substate groups, including international terrorists, organized criminal groups, and domestic extremists. The claim here is not that they are all worsening steadily but that some are (environmental threats), and others strongly affect the perceptions of citizens.

Taken together, these threats create a situation in which the threats to the well-being of citizens in many countries come from factors other than external attack by foreign governments.¹¹⁶ With the growing number and potential risk of such disruptive events, “the notion that resilience should be a cornerstone of American grand strategy has gained increasing attention.”¹¹⁷ Andrew Hoehn and Thom Shanker have called for the development of an

industrial-strength lifesaving machine as a counterpart to a system that, for too long, was focused on being the best at threatening lethal force to deter adversaries and carry out military operations if—when—deterrence failed. A lifesaving machine is needed to protect American lives from digits and microbes as much as from planes, bombs, and bullets.¹¹⁸

As one scholar recently argued, because of the many domestic threats facing U.S. citizens:

The coming era will be one of health crises, climate shocks, cyberattacks, and geoeconomic competition among great powers. What unites those seemingly disparate threats is that each is not so much a battle to be won as a challenge to be weathered. This year, a pandemic is forcing hundreds of millions of Americans to stay

¹¹⁴ Gilding, *The Great Disruption*.

¹¹⁵ Jyothi, “Solar Superstorms.”

¹¹⁶ Mazarr, “Time for a New Approach to Defense Strategy.”

¹¹⁷ Borghard, “A Grand Strategy Based on Resilience.”

¹¹⁸ Hoehn and Shanker, *Age of Danger*, pp. 9–10.

at home. Next year, it might be a 1,000-year drought that devastates agriculture and food production. The year after that, a cyberattack could take out the power grid or cut off critical supply chains. If the current pandemic is any indication, the United States is woefully underprepared for handling such disruptions. What it needs is an economy, a society, and a democracy that can prevent these challenges when possible and endure, bounce back, and adapt when necessary—and do so without suffering thousands of deaths and seeing millions unemployed. What the United States needs is a grand strategy of resilience.¹¹⁹

These growing threats to homelands create a challenging context for competitive advantage and help to define the demands of the emerging era. Effective institutions and policies to safeguard the security of homelands are a precondition for full national success, and that will require legitimate and effective governance structures for these issues.

Rising constraints on trade in critical materials and goods and emphasis on national self-sufficiency. Various intersecting developments have interrupted the long-term trend toward unconstrained regional and, to a lesser extent, global trade integration. These include political reactions against job losses, the disruptive effects of supply chain distributions, and national security concerns over dependency on foreign supplies for critical goods and raw materials.¹²⁰ The data are somewhat mixed on globalization in general. Some measures show a slowing or, in some domains, reversal of globalizing trends. The KOF Globalisation Index shows a leveling off of the economic, political, and social aspects of globalization since the decade after 2010;¹²¹ global nontariff barriers have been rising since the late 1990s, reaching a peak of about 4,000 in 2001 and again in 2019 (although the numbers have fallen off somewhat since then); and the share of U.S. corporate profits from foreign sales has been declining steadily since 2017–2018 (although current levels remain higher than much of the 1990s).¹²² Recent data, however, suggest that global trade in general and international capital flows have already rebounded to prepandemic levels,¹²³ and it would be premature to declare an end to globalization.¹²⁴ But it is undeniably true that many nations have recognized the dangers of unthinking reliance on others for critical goods (i.e., medical supplies, energy, subcomponents, or essential raw materials) and have undertaken various initiatives to enhance national autonomy in targeted areas.

High levels of change and uncertainty and recurring and overlapping crises, with a concomitant requirement for both anticipation and hedging. Finally, the emerging competitive paradigm is one characterized by especially high levels of uncertainty, partly as a product of multiple intersecting risks.¹²⁵ The future course of many global relationships and trends—great-power relations, the impact

¹¹⁹ Sitaraman, “A Grand Strategy of Resilience.”

¹²⁰ Posen, “The End of Globalization?”; Farooq, *Homecoming*.

¹²¹ KOF Swiss Economic Institute, “KOF Globalisation Index.”

¹²² J. P. Morgan Asset Management, *The Lifeboat Economy*, pp. 4–11.

¹²³ Altman and Bastian, “The State of Globalization in 2022.” They conclude, “The trends we have looked at thus far highlight the resilience of global connectedness during the pandemic.” Another recent study concludes that “the theory of an upcoming end of globalization is not confirmed by data nor by economic and geopolitical considerations” (Rossi, “Deglobalization or Slowbalization?”).

¹²⁴ Bremmer, “Globalization Isn’t Dead.”

¹²⁵ Macaskill, “The Beginning of History”; Orlik, Galvao, and Johnson, “A Practical Way to Make Sense of All the Shocks Hammering the Global Economy.”

of technological innovations, and climate change impacts—betrays a much higher degree of variability than in recent decades. The 2021–2022 United Nations Human Development Index report described the overall phenomenon as an “uncertainty complex”:

Layers of uncertainty are stacking up and interacting to unsettle our lives in unprecedented ways. People have faced diseases, wars and environmental disruptions before. But the confluence of destabilizing planetary pressures with growing inequalities, sweeping societal transformations to ease those pressures and widespread polarization present new, complex, interacting sources of uncertainty for the world and everyone in it. That is the new normal.¹²⁶

It is precisely the interaction of these multiple levels of stress and crisis—environmental, social, and political—that creates the potential for high levels of volatility. “The interaction of different layers of uncertainty,” the report continues, “makes the current context one of systemwide turbulence.”¹²⁷ Many outcomes are possible in each of these areas, raising the premium, from a competitive standpoint, on national strategies of hedging, resilience, and anticipation to steer a course through this volatility. The World Economic Forum 2023 risk report highlighted a similar emerging reality, one it described as the “turbulent twenties,” a period of intersecting economic, environmental, and geopolitical risks.¹²⁸

¹²⁶ United Nations Human Development, *Uncertain Times, Unsettled Lives*, p. iii.

¹²⁷ United Nations Human Development, *Uncertain Times, Unsettled Lives*, p. 47. The UN’s assessment of this theme appears on pp. 24–73.

¹²⁸ World Economic Forum, *The Global Risks Report 2023*.