Concluding – The Economics of Science at a Turning Point

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1. Introduction

The production of this volume unfolded at a moment of unusual tension for science, for higher education, and for the institutions that have sustained knowledge creation for more than half a century. The economics of science has matured into a vibrant field, equipped with new data, new methods, and an increasingly sophisticated understanding of how scientific discovery, innovation, and economic growth interact. Yet just as this analytical capacity has expanded, the social and political foundations of science are being challenged in various fronts. Indeed, science today faces not a single crisis but a convergence of pressures, including political polarization, declining trust in academic expertise, intensifying geopolitical competition, changing patterns of funding, and growing demands for accountability and measurable impact. Thus, the questions raised go to the heart of the social contract between science and society.

This concluding chapter draws together the themes that surfaced throughout a closing panel of the NBER conference on the Economics of Science, bringing together economists, scientists, senior policymakers, and research administrators. This panel, was designed to take a broader reflection on where the economics of science stands today, and where it may need to go next.

The key message that emerged is simple but demanding: the field has reached a point where it must combine academic rigor with institutional and social responsibility. Understanding the interactions between science and the economy is certainly not enough – we must also grasp how science is governed, trusted, funded, and defended, as well as how the public perceives the scientific enterprise. The ensuing insights should then be reflected in the advancement of policies and other public actions to ensure the continuous flourishing of science in an open world.

2. From Measurement to Meaning

Over the past two decades the economics of science has made remarkable progress. New bibliometric tools, administrative data, and computational methods have enabled researchers to map knowledge flows, estimate spillovers, and study the dynamics of collaboration at a much larger scale than what was possible as recently as the start of this decade. The chapters amply showcased this remarkable progress, with sophisticated and data-intensive work on areas such intangible assets, international scientific mobility, regional clusters of innovation, and the long-run effects of public investment.

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Yet these advances have also revealed longstanding challenges, such as the estimation of the returns on investment in R&D. Policymakers routinely ask for such estimates, hoping for a clear metric that can justify budgets and guide priorities. Scholars have responded over time with increasingly refined approaches, yet the variance of the resulting estimates remains exceedingly large, reflecting the inherently complex and varied nature of the subject matter.

Scientific knowledge generates spillovers that are inherently unpredictable, cumulative and deeply entangled with complementary investments—in education, infrastructure, institutions, and private innovation. Attempting to isolate the marginal return to a dollar of research funding risks imposing a precision that the underlying process does not support. The danger is not only methodological; it is also rhetorical. When science is oversold in terms of precise economic payoffs, it becomes vulnerable to backlash when expectations are not met.

This does not imply that measurement is futile. On the contrary, better evidence about the social value of research remains essential. But the goal should shift from producing definitive estimates to building a richer understanding of mechanisms: how different kinds of research contribute to different types of economic growth, social resilience, and well-being; how institutional design shapes outcomes; and how knowledge circulates across borders, sectors, and generations. The challenge is no longer merely to show that science matters, but to explain ***how*** it matters—and under what conditions it matters most.

3. Leadership, Absorption, and the Globalization of Knowledge

Another recurring theme of the conference was the changing geography of science. For much of the postwar period, the United States—and, more broadly, the advanced Western economies—occupied a dominant position in global research. That era is coming to a close: other countries, most notably China, have expanded their scientific capacity at extraordinary speed, narrowing gaps in publication volume, citation impact, and technological capability.

This shift has generated anxiety in some quarters, often framed in terms of the "loss of leadership." Yet historical perspective should temper this concern. What matters most is not who leads the extent to which ideas, knowledge, discussions as well as scientists and resources can circulate freely around the world, encouraging interactions and collaborations. Furthermore, many countries have prospered without being the primary producers of scientific breakthroughs, but rather wisely relying on ***absorptive capacity***: the ability to learn from others, adapt knowledge to local conditions, and translate ideas into productive use.

The real danger, therefore, is not relative decline in scientific rank, but erosion of the institutional foundations that support openness, learning, and adaptation. A country that

retreats into “scientific protectionism” risks damaging the scientific enterprise globally, as well as its own scientific prowess.

At the same time, the globalization of knowledge raises new questions for the economics of science. How do international collaborations affect the distribution of benefits from research? What happens when scientific openness collides with national security concerns? Can global science remain a shared enterprise in an era of geopolitical rivalry? These are no longer abstract issues. They shape funding priorities, visa policies, data-sharing norms, and the everyday practice of research. The field must therefore expand its analytical lens. Understanding science today requires attention not only to markets and incentives, but also to geopolitics, trust, and institutional design across borders.

4. Science and Its Discontents

Perhaps the most sobering theme to emerge from the concluding panel was the sense that science has become politically vulnerable. This is not simply a matter of political shifts leading to – often temporary – diminished support, but the reflection of deeper currents of mistrust toward expertise, resentment of elites, and frustration with economic and social inequalities.

In this context, science is sometimes perceived not as a public good that serves the whole of society, but as a further instance of a privileged class that promised generalized progress yet failed to deliver it evenly. The detrimental effects of rapid globalization and technological change for some segments of society, as well as the divergent views on the management of the Covid crisis have all sharpened these perceptions. When experts appear to speak with great confidence about complex systems—whether trade, climate, or pandemics—only to revise their views as evidence evolves, the very norms of scientific inquiry can be misinterpreted as weakness or duplicity.

The economics of science cannot remain indifferent to these challenges. Its findings are embedded in political narratives whether scholars intend them to be or not. Claims about efficiency, optimality, or aggregate gains resonate differently in societies marked by deep distributional divides. In such settings, the legitimacy of science depends not only on its accuracy, but on its perceived fairness and humility.

This implies a need for reflexivity: we must examine not only how science influences society, but how society perceives science—and how those perceptions feed back into policy. The backlash against expertise is not merely exogenous – rather, it is partly the result of how expertise has been communicated, institutionalized, and aligned (or not) with broader social goals.

Beyond politics, the conference discussions highlighted growing stress within the institutions of science themselves. The postwar model of research funding—characterized by competitive grants, expanding universities, and relatively stable public support—faces mounting pressure. In some sectors, particularly in biomedical research, the dependence on external grants has created a precarious equilibrium, whereby entire

research labs as well as individual researchers across the US are in a constant race to keep these grants flowing. [2] Rising political uncertainty regarding research funding affects not only individual careers, but also the direction of research, encouraging short-termism and risk aversion precisely where bold experimentation is most needed.

Publishing and evaluation systems are also under strain. The proliferation of journals, preprints, and metrics has increased visibility but blurred standards. The incentives that govern hiring, promotion, and tenure often lag behind changes in how knowledge is produced and shared. Innovative ideas—such as thematic, mission-oriented publication platforms designed to communicate evidence on specific policy-relevant questions—point to possible reforms. However, their success depends on whether academic communities are ready to recognize and reward new forms of contribution and distribution.

These institutional challenges underscore a broader point: the economics of science must engage more directly with organizational design. Funding mechanisms, evaluation systems, and career structures are not neutral backdrops - they shape what kinds of knowledge are produced, who produces it, and whose voices are heard.

5. Communicating Science

One of the most persistent concerns voiced in the discussions was the gap between scientific reasoning and public understanding. Scholars are trained to persuade through evidence, logic, and nuance. Yet public discourse often operates in a different register—one shaped by emotion, identity, and prevalent narratives, fed and stimulated by social media and self-appointed "influencers", that often supplant science-based authorities. Furthermore, sporadic instances of scientific misconduct contribute to public distrust, making the public more susceptible to misinformation (e.g., false health claims about common foods, promotion of unproven supplements).

This widening chasm between science and society constitutes a very real and growing challenge: on the one hand, simplifying scientific claims so as to make them more accessible to wider segments of society risks distortion. On the other hand, failing to connect with the public leaves the field vulnerable to misrepresentation by others less committed to accuracy. The result can be a vacuum in which misinformation flourishes.

Addressing this challenge does not mean that scientists must become political activists or media personalities, but it does require recognizing communication as a core component of the scientific enterprise, not an optional add-on. It also requires humility about comparative advantage: professional communicators—journalists, educators, civic leaders—often play a crucial role in translating complex ideas into accessible

[2] The annual budget of the NIH, the single largest research budget in the world, was a staggering 47 billion dollars in 2025.

forms. Strengthening the ecosystem of intermediaries between science and society may be as important as improving the clarity of academic prose.

For academics to communicate more effectively outside their immediate circles, they should, first, engage policymakers early in the research process to understand their needs, rather than simply delivering finished research; and second, they should strive to incorporate affected communities into the research process to enhance impact and public trust, especially concerning societal benefits and distributional impacts.

For the economics of science, all of this implies a dual responsibility: to continue refining analytical tools, and to ensure that the insights they generate are intelligible and meaningful beyond the academy. The legitimacy of public investment in research ultimately rests not only on the statistical significance of regression coefficients, but on whether citizens feel that science serves shared purposes.

6. New Frontiers for the Science of Science

If the challenges facing science are broad, so too are the opportunities for the economics of science to evolve. Several promising directions stand out. First, there is a growing need for long-term, mission-oriented research efforts that go beyond isolated papers. Broad themes such as the social returns to research in all its forms, the effects of diversity on innovation, or the relationship between science and national security, cannot be properly addressed by individual studies. They require sustained, coordinated inquiry, large-scale data, and mechanisms for synthesizing evidence over time. New institutional forms that support such research paths could reshape how the field contributes to policy.

Second, the advent of artificial intelligence as the latest and most dramatic manifestation of the digital revolution, is not only upending the conduct of the scientific enterprise, but also calling into question traditional measures of scientific output. The economics of science must adapt its tools to capture these shifts, developing new ways to assess impact, as the conventional ones such as journal publications and patents no longer tell the whole story.

Third, the intersection of science and national security demands careful attention. In an era of resurgent geopolitical and technological rivalry, governments increasingly view research through a strategic lens. Yet the economic consequences of this shift—on collaboration, diffusion, and long-term innovation—remain poorly understood. Here, the field has an opportunity to inform debates that will shape the global scientific landscape for decades.

7. Concluding remarks

The tension between the economics of science seen primarily as an academic area of inquiry on the one hand, and the need to project it onto science policy on the other, permeated many of the discussions. Of course, there is merit to each perspective: closer

engagement with policy risks compromising scholarly independence, yet detachment is no longer tenable given the stakes.

The prevalent view was that whereas scholars should be careful not to confound academic research on science with policy making, they should be mindful of the policy implications of their work, and of its relevance for the continuing flourishing of the scientific enterprise. The institutions of science are too consequential for society – and too fragile – to be left entirely to forces outside academia.

Engagement does not mean advocacy for specific programs or types of funding. It means contributing evidence, framing choices, and clarifying trade-offs. It also means acknowledging uncertainty and resisting the temptation to offer false precision. In a polarized environment, credibility rests as much on restraint as on scientific veracity.

The economics of science has come of age at a time when science itself faces unprecedented scrutiny. This coincidence is both a challenge and an opportunity. The challenge lies in navigating a world where expertise is contested, institutions are strained, and expectations are volatile. The opportunity lies in helping societies understand not only what science produces, but why it matters, how it works, and why it needs to thrive.

We hope that this volume will not only provide a snapshot of the state of the field, but also help define its next phase, which must be marked by three commitments: First, to continue developing with renewed impetus better data, better models, and deeper historical understanding. Second, to increase institutional awareness, recognizing that funding systems, career structures, and publication practices shape knowledge as much as ideas do. Third, to accept and embrace social responsibility, since so much of society's wellbeing depends upon science, and in turn so much of the scientific enterprise depends upon society willing to nurture it.