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POLICY BRIEF

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The Role of Congress in U.S. Science, Technology, and Innovation Policy

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Congress is the ultimate arbiter of federal science, technology, and innovation (STI) policy, with the final say on everything from the size of agency science budgets to the nature of regulations. However, the Congressional agenda in STI policy is shaped primarily by presidential priorities and the concerns of national interest groups. The role Congress plays is different for the different aspects of STI policy: 1) science policy; 2) technology support; 3) technology policy; and 4) regulatory policy. This brief outlines those differences and notes some of the obstacles that impede Congressional initiative in this area.

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Congress is the ultimate arbiter of federal science, technology, and innovation (STI) policy. While it defers, or delegates to the executive branch on many aspects of STI policy, as a legal matter, Congress has the final say on everything from the size of agency science budgets to the nature of regulations.

While the Constitution vests Congress with ultimate authority, it is largely a reactive body. The Congressional agenda in STI policy is shaped primarily by presidential priorities and the concerns of national interest groups.

The role Congress actually plays, is different, however, for the different aspects of STI policy—science policy (the funding and oversight of basic scientific research); technology support (the funding of programs directly intended to promote technology); technology policy (policies, such as tax and patent policies, that may influence technology development and deployment) and regulatory policy (strictures the government may impose directly on technologies or on the externalities, such as pollution, they might generate).

SCIENCE POLICY

For science policy, the institutional structure of the Congress, the arcane nature of science, the relative obscurity of science policy issues, and even the longstanding consensus in favor of federal research spending all tend to limit Congressional initiative.

The structure of Congress fragments jurisdiction over science policy. Numerous committees have authorizing responsibilities for one or more science agencies—that is, they oversee and can direct an agency's operations through hearings, legislation, and more informal means, such as letters. The House Committee on Science and Technology, which was established in 1958 and initially oversaw just NASA, is the only committee in either the House or Senate that has science as its primary focus, but it lacks legislative control over several major agencies, such as the National Institutes of Health.

In any event, authorizing committees do not allocate actual dollars to science agencies. That is the province of the House and Senate appropriations committees (which can also provide policy direction), and spending control over the science agencies is distributed among the appropriations subcommittees. Each subcommittee has its own pot of money that it allocates among the agencies in its purview, so science agencies do not necessarily compete directly with each other for funds in the appropriations process; rather, they compete against the agencies that happen to share the subcommittee to which history has assigned them. Sometimes the agencies that report to a subcommittee share a common theme—most energy-related programs are in one subcommittee, for example—but they can also be a bit of a grab-bag.

Diversity in Structure, Consensus on Content

In many ways, this disaggregated, overlapping, and somewhat random arrangement of jurisdictions has turned out to serve science well. It has encouraged diversity in the federal research establishment: Different agencies can take differing approaches to scientific questions, and they have different methods for reviewing proposals. Having more committees with their fingers in the science pie has also meant that more representatives and senators have some familiarity with, and interest in, the health of the science agencies.

At the same time, the dispersal of authority makes it difficult to attack science as an overall enterprise, and few members of Congress or Congressional staff focus enough on science to make it their defining issue or to pursue deeper questions about how to shape or organize science policy. Moreover, many—if not most—of the members of Congress who actively engage in science policy issues are concerned primarily with furthering the interests of specific institutions in their home state or district—a university or a federal laboratory, for example. Beyond that, members of Congress often feel uneasy about dealing with questions that would involve making judgments about the value of a particular field of science, and they tend to defer to the Executive Branch on issues that seem to draw directly on scientific expertise.

Finally, the interest groups that work to influence the Congressional science policy agenda—universities, disciplinary societies and business groups, for example—are essentially on the same page on the broadest issues. They work to increase research spending, and they resist federal mandates and changes to the status quo. Perhaps uniquely among areas of public policy, science policy is characterized by consensus; there are no standing armies in opposing camps of lobbyists. Science policy is rarely a topic in political campaigns, and when it is, the issue is usually which candidate would provide more generous support for research. Rarely do disputes erupt that can be parsed or reconciled only by re-examining first principles.

The structure of Congress, the abstruse character of science, the nature of local and national interests, and the postwar U.S. record of scientific, technical, and economic success work together to create a sense of comfort with the status quo. When Congress does seek guidance, it is often looking to have its assumptions vindicated. The legislators who asked the National Academy of Sciences to undertake the study that produced Rising Above the Gathering Storm, for example, were seeking ammunition for their existing efforts to increase science spending.

TECHNOLOGY SUPPORT AND POLICY

Technology support (outside of the defense sector) is a more volatile area. The longstanding quarrel, going back almost to the nations' founding, over the proper role of the federal government in promoting technology continues. Debates over technology support tend to send members of Congress back to their philosophical corners; they retreat to their ideological predisposition for or against federal activity generally (with Republicans generally opposing what they see as federal intrusion in the marketplace and Democrats generally supporting what they see as a needed effort to underpin innovation).

While the argument most often advanced against technology support is that the government "should not pick winners and losers," the debate is actually fiercest over programs that are not geared to assisting a particular industry or company. In such cases, there is less likely to be a particular company or group arguing that it needs the aid.

Technology support jurisdiction is just as widely dispersed as science policy jurisdiction is, with the House Committee on Science and Technology having broad reach, but many other committees overseeing key agencies, including the Department of Defense. And here, too, the appropriations committees ultimately hold the purse strings, and again they are in the hands of many different subcommittees.

In technology policy, Congress plays a more assertive role. Congress is just as likely to initiate action or originate proposals as to react to the White House. And in most areas of technology policy—and tax policy, in particular—the executive branch has relatively little authority to initiate new approaches without direct Congressional action. By contrast, in controlling spending for science or technology, Congress must provide the overall funding for an agency, but it does not necessarily dictate the details of how that money may be spent. And regulatory laws often give agencies broad authority to set regulations in a particular area as long as they meet general criteria.

Congress does not change tax or patent policy often; the hurdles are high given the complexity of the issues and the number of interests wedded to the status quo. Action may follow months or even years of hearings (and informal meetings) to take testimony from private experts and interested parties. Jurisdiction is much more centralized: a single committee in the House and one in the Senate control tax policy, for example. But those committees are not focused on STI policy; they are in charge of broader issues that just happen to have a major impact on innovation. So the tax-writing committees, for example, are much more likely to consider how much revenue a tax proposal will raise or lose, or equity issues than to think about its impact on STI.

REGULATORY POLICY

Regulatory policy is similar in that regard; the committees setting regulatory policy are not necessarily concerned with the impact on innovation. There are exceptions: debate over telecommunications policy often includes discussion of innovation impacts, and proponents of environmental regulation often assert that new rules will prove feasible because they will force companies to innovate. But regulatory policy is rarely driven primarily by STI concerns. Political philosophy, or unease about burdens on a given company, or a desire to address a particular health, environmental, or consumer concern is much more likely to be at the heart of regulatory discussions.

Numerous Congressional committees oversee the diverse federal regulatory agencies. Existing statutes give those agencies broad authority in their areas of expertise. The issues are complex, so the executive branch is the pacesetter in regulatory matters. Congress always has the authority to block or repeal a regulation issued under current law, but rarely does so. In recent years, the deep ideological divide in Congress has resulted in a stalemate that has made it virtually impossible to amend or pass new regulatory laws and only slightly less difficult to reverse executive action. (By contrast, Congress has to pass spending bills each year or the government shuts down.) Still, regulatory policy continues to be a subject of Congressional hearings, often to debate whether the "science"—including federally-funded science—justifies a proposed regulation.

Actually, in all four aspects of STI policy, Congress' role as a sounding board may be as important as its power to legislate. Congress is the most transparent branch of the federal government, and it is where the manifold interests involved in STI policy most visibly air their views, proposals, and grievances. That discussion itself helps shape media coverage, public opinion, and executive action.

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