Meeting Summary

Role of the Bayh-Dole Act in Promoting Innovation & Implications for Innovation Systems in Developing Countries

May 2, 2005

On May 2, 2005, more than 20 staff from The Rockefeller Foundation and eight invited experts\(^1\) participated in an all-day meeting that focused on the role of the Bayh-Dole Act in promoting innovation and the implications of this model for innovation systems in developing countries. The meeting had five overall objectives.

1. To assess, through a review of the literature, current views about the impacts of the Bayh-Dole Act (e.g., innovation and commercialization, universities, national economic competitiveness, etc.).
2. To explore how the Bayh-Dole Act has affected innovation and commercialization of products that serve the needs of the poor and excluded.
3. To explore how the Bayh-Dole Act has affected the ability of scientists, health workers and farmers in developing countries to access new technologies.
4. To explore whether the Bayh-Dole Act is affecting models of open source technology development, humanitarian use licensing practices, socially directed collaborative research, and other "alternative models of innovation."
5. To explore whether these lessons are relevant to intellectual property (IP), technology management and other innovation policies in developing countries.

To help inform the discussions, The Rockefeller Foundation commissioned two background papers for the meeting. The first paper was written by Professor David Mowery,\(^2\) “The Bayh-Dole Act of 1980 and University-Industry Technology Transfer: A Policy Model for Other Governments?” The second paper was written by Sara Boettiger\(^3\) and Alan Bennett,\(^4\) “The Bayh-Dole Act’s Effects on Developing Countries: Topics for Discussion.”

The meeting began with presentations by the authors of the two background papers. The first presentation by David Mowery focused on the origins and effects of the Bayh-Dole Act, especially the Act’s effects on U.S. universities’ contributions to industrial innovation since 1980. He summarized the central achievement of the Bayh-Dole Act as having rationalized and simplified federal policy toward assignment of patent rights, licensing, much of which had previously been managed through ad hoc agreements with individual universities. By transferring the IP rights for federally funded research to universities, the Act reduced federal agencies’ influence over university licensing.

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policies. But it did retain significant federal rights to royalty-free, nonexclusive license to any patent, “march in” rights to mandate licensing of a patented invention (not invoked thus far), and the power to deny patent rights to a contractor/inventor “in exceptional circumstances” (invoked once).

The presentation emphasized that “the Bayh-Dole Act was one part of a broader shift in U.S. policy toward stronger intellectual property rights, and the effects of Bayh-Dole thus must be viewed in the context of this larger shift in U.S. policy toward intellectual property rights.” Mowery stated that, “although many observers have argued that Bayh-Dole stimulated university-industry technology transfer, these characterizations of the positive effects of the Bayh-Dole Act cite little evidence in support of their claims beyond counts of university patents and licenses, and none has attempted to assess the relative importance of Bayh-Dole and other factors. Nor does evidence of increased patenting and licensing by universities by itself indicate that university research discoveries are being transferred to industry more efficiently or commercialized more rapidly.”

In experience that might be replicated in developing country universities managing IP for the first time, he noted that many “entrant” universities in the US initially obtain “lower-quality” patents, but that over time, patent quality improves.

Mowery’s review of the literature confirmed that for many US universities, the significant institutional investment in managing and licensing IP under Bayh-Dole rules has either generated a loss, or only modest financial returns. But there are other non-revenue motives for university patenting, including support to faculty professional aspirations, and promoting economic development through technology transfer. Although the legislation was intended to promote relationships between universities and industry, there is some evidence to suggest that aggressive management of IP by US universities has led some US firms to partner with non-US universities where IPR regimes are less restrictive.

The second presentation by Sara Boettiger focused on the effects and implications of the Bayh-Dole Act for developing countries. The presentation identified a number of topics people interested in IP policies in developing countries should consider as they review the appropriateness of the Bayh-Dole Act (or elements of the Act) as a potential model for national science and technology policies in developing countries. She highlighted the Act’s provisions that privilege small businesses and domestic manufacture that could be seen as tools to promote local development. She also summarized literature that criticized the Act as creating incentives to patent and exclusively license technology in a way that could create barriers to access, lead to delays in publication of research, create conflicts between public and commercial interests, and shift research incentives from basic to applied research. The presentation and accompanying paper cautioned against projecting the reported benefits of the Act in the US to a developing country context without careful consideration of the history and characteristics of the local innovation system. The US well-established IP system, long history of university-industry collaboration, and case law that supports IP in biotech and bio-medical industries makes its situation a uniquely fertile ground for the Act’s incentive structure.
The participants engaged in discussions following each of the two presentations. The remainder of the meeting focused on four broad questions.

1. What impact, if any, has the Bayh-Dole Act had on innovation and commercialization of products that serve the needs of the poor and excluded, especially in the areas of health and agriculture? What reform efforts, if any, are needed to encourage innovation and commercialization of products aimed at serving the poor?

2. What impact, if any, has the increased patenting and licensing of IP that (at least in part) resulted from the Bayh-Dole Act had on the ability of scientists, health workers, and farmers in developing countries to access new technologies? What reform efforts are needed, if any, to improve access to technology?

3. What impact, if any, has the Bayh-Dole Act had on models of open source technology development, humanitarian licensing practices, socially directed collaborative research models, and other alternative models of innovation? Specifically, has the Bayh-Dole Act resulted in approaches to open source technology development, humanitarian use licensing, etc. in the US that differ from other countries?

4. What is the relevance of lessons from US experience with the Bayh-Dole Act for intellectual property (IP), technology management, and other innovation policies in developing countries?

Throughout the day, it was clear that the Bayh-Dole Act was serving as a proxy for a larger set of institutional, policy, legal, and socio-economic issues. The group used this as an opportunity to test general assumptions about the relationship between intellectual property rights, innovation, and humanitarian needs in health and agriculture. There were clear differences among the group in regard to whether the Bayh-Dole Act and the policy choices that it represents have promoted the commercialization of technology generally, let alone whether the incentives it creates have moved the US innovation system away from or towards humanitarian objectives. It was acknowledged that both critics and proponents of the Bayh-Dole model are hampered by the absence of an adequate metric and data for assessing the social and economic impact of the Act. Measuring number of patents filed and approved, or the number of technology offices created and technology managers employed, provides only a limited insight into whether the Bayh-Dole incentives have brought significant benefits to society.

However, most participants seemed to concur that patenting and the commercial licensing of proprietary licensing are not sufficient to drive innovation for the public good. Participants noted that the original drafters of Bayh-Dole recognized this risk and built in “march-in” and other rights the government can exercise to serve the public good when the market fails; but these have never been exercised, and it is unclear whether their presence (i.e., the possibility they could be exercised) have had an impact on the practice of technology management. In this context, the group discussed how a policy framework
premised on a system of property rights and fueled by commercial markets could be directed to combat diseases and serve communities that markets usually leave behind.

Participants noted that the Bayh-Dole Act represents a policy choice to vest control of the intellectual property generated from publicly funded research with the institution, and not the researcher or the state. It provides incentives for universities to patent innovations that have potential commercial value. It does not, however, place significant constraints on the way in which universities choose to license those patents. This means that technology managers and the licenses they execute (rather than patents) become the crucial agents in determining which technologies move to commercialization and under what terms.

A hypothesis developed at the meeting suggested that if, for example, technology managers at major research universities were made more aware of the challenges associated with neglected disease research and development, they could play an important role putting technology into the hands of people working on these critical humanitarian problems. They could, for example, view product-development public-private partnerships as a preferred class of licensee or promote non-exclusive humanitarian licensing, etc., thereby increasing the likelihood of a transfer (or reservation for future use) of a critical technologies. It was also suggested that technology managers do more than simply vet and license technology. They are a source of incentives and information in the university research and development process that could shift research trends towards applied research. Perhaps, for example, a cadre of technology managers could influence upstream research towards applications for global health.

Redirecting the role of technology managers will however, require a combination of new tools, such as humanitarian licenses. It will require changes in attitude among technology managers, and researchers, donors and the university leadership. And it will require greater access by technology managers to information about the kinds of technology needed by the poor and the range of public-private partnerships, private sector partners, and funders that can bridge the gap between innovation and commercialization.

At the end of the meeting, participants from outside the Foundation encouraged the Foundation to continue its exploration of the broad set of issues that were raised throughout the day. Several participants encouraged Rockefeller to continuing narrowing the debate and dialogue about these issues to core, unresolved and unanswered questions. Several participants noted the critical need for information, whether it is information for developing country policy makers considering adoption of “Bayh-Dole-like” legislation or for technology managers in the US who could play a more significant role in helping universities put their technology to use in combating humanitarian problems. Other participants suggested that the Foundation could use its reputation to raise awareness of these issues and serve as a catalyst for collaboration around these issues among leaders in the public and private sectors.