

White Paper on Public Funded R&D Projects (Protection of Intellectual Property) Bill

The Government of India plans to introduce a Public Funded R&D Projects (Protection of Intellectual Property) Bill in the upcoming legislative session. The Bill, if enacted, would enable and encourage

recipients of government-funding to patent and license the results of their research. This, in turn, would provide incentives for those recipients to work with industry players to commercialize the basic research, turning it into products and services that benefit the population at large, driving economic growth, employment, foreign direct investment, and tax revenues.

This White Paper sets forth reasons for supporting the Bill. Part I explains how the Bill will facilitate IP-based economic development. Part II sets forth the key legislative provisions that unlock technology transfer and growth. Part III describes some of the benefits that the Bill, if enacted, would bring to India. Part IV addresses some criticisms of the Bill that have been made by others, or in discussion of similar legislation elsewhere, and explains why those criticisms are misplaced. Finally, Part V suggests some changes that would improve the Bill and further its objective of transforming government research funding into economic growth.

I. How the Bill Will Facilitate IP-Based Economic Development

The Bill, if enacted, will spur economic development in the technology sector by creating a system that facilitates commercialization of government funded research, leading to new products and services for consumers and businesses and resulting economic growth. It does so by establishing the general rule that recipients of government funding can patent resulting inventions, and license them to businesses. Without this basic legal foundation permitting patenting of inventions arising out of government-funded research, commercialization of that research will lag. For example, in the U.S., prior to passage of the Bayh-Dole Act, each government agency set its own policy regarding how to protect and license inventions resulting from government funding. Most chose to keep title to the invention themselves, and license the results to all comers on a non-exclusive basis. The net result was that few patents were licensed, because (a) the agencies did not have dedicated licensing offices and (b) companies were reluctant to take non-exclusive licenses, as nothing would prevent their competitors from copying any successful commercialization of the technology.

Thus, a legal regime that permits patenting by recipients is a necessary first step to drive commercialization and resulting economic development. However, it is only a first step. Once recipients have the right to patent their inventions, they should be encouraged to do so. Part of this incentive, of course, comes from the potential royalties that can be obtained by licensing the technology. Other important incentives include (a) a requirement to report regularly to the government agency on inventions developed as a result of its funding, so that the recipient is pushed to track and evaluate the licensing potential of its inventions, and (b) government devotion of economic development funding to promoting the commercialization government-funded research via various means (*e.g.*, seminars, innovation tours, technology-matching marketplaces).

Similarly, in order for the Bill to achieve its objectives, universities and research institutions will need to develop IP policies that enable effective patenting practices. They will also need to set up technology transfer offices to license out patented inventions. Although the India Institutes of Technology already license many of their technologies, other universities may not have considered these issues before. By adopting best practices from the IITs, they can develop policies that facilitate the commercialization of

government-funded inventions in a manner consistent with academic freedom and publication. Malaysia has done this well, with both the Malaysian Palm Oil Board and the Malaysian Agriculture Research and Development Institute offering an extensive list of technologies available for commercialization.

Finally, trust between academic institutions and industry is critical to commercialization of government-funded research. Some academic institutions may see themselves as more devoted to pure research. In turn, industry may not have good contacts with universities and fear that information about their commercial plans may become public if they license in key technologies. Creating trust through (a) positive examples of collaboration and (b) the development of systems that encourage industry-academia cooperation while preserving confidentiality is key to ensuring that the Bill has its intended effects.

This system has worked well in other countries. For example, in China, Peking University started Founder Group in 1986 with a \$50,000 investment. Founder Group's key technology was a patented laser typesetting system that was invented at Peking University using government funding. Founder Group became the market leader in Chinese print technology, and now has roughly 85% market share in China's print market. Founder Group now works as a sort of incubator/VC for Peking University. Similarly, Neusoft is a spin-off from the Software Development Centre of China's North East University. It formed a joint venture with Japan's Alpine Electronics in 1993 and became the first specialized software company to be listed on the Shanghai Stock Exchange (1996). Neusoft is now one of the largest publicly listed software companies in China.

In the U.S., which enacted the Bayh-Dole Act in 1980, the economic impact has been significant. In 1980, the federal government owned around 28,000 inventions, fewer than 5% of which were licensed to industry for commercialization. By contrast, universities have created over 3,600 new products since 1980 – over one per day between 1998-2005. And, in 2005, universities created over 628 spin-off companies, or 1.7 per day. In sum, today over 200 U.S. universities are engaged in technology transfer, adding more than \$21 billion each year to the economy.

It must be emphasized that legislation and agreements that provide for technology transfer from universities and the private sector is not just a boon for universities or the private sector – it is good public policy. As noted above, prior to the enactment of the Bayh-Dole Act in the United States, many government-funded inventions would lie fallow if they were not protected or could not be effectively transferred or licensed to companies that wanted to bring them to market. When such effective transfer and licensing can take place, inventions are used resulting in products and services that come to market resulting in the creation of jobs, wealth, and potential tax revenues for the public benefit. More importantly, however, such effective transfer and licensing of intellectual property means that the people of India will enjoy the products and services that started with the early-stage investment in research by the Government of India.

II. Key Legislative Provisions

As noted above, this system of commercialization of innovation and economic growth begins with the development of an enabling legislative framework. In our view, the following provisions are key to providing a solid foundation for transforming government-funded research into economic growth:

- **The ability of research institutions to patent government-funded inventions.** This is the heart of the proposed Bill. Once research institutions have the right to patent inventions resulting from government funding, they can then license them to businesses, receiving royalties that fund further research and education and enabling businesses to invest in commercializing the research. The ability to patent government-funded inventions is the linchpin of this system of incentives that turns government-funded research into new business lines that drive economic growth. Without these incentives, inventions resulting from government-funded research may continue to sit on the shelf, providing little or no benefit to potential users.
- **Provision of remuneration for individual inventors and their research staff.** It is important that legislation provide that the creator of the invention receive some portion of the royalty stream generated from the licensing of the invention. Remuneration of individual inventors gives them an incentive to provide information on their inventions in a timely manner and to work with the research institution on documenting and patenting the invention. It also properly rewards those individuals at the forefront of cutting-edge research, creating an incentive for others to engage in similar endeavors. In addition, the research staff who assist with development of the invention should receive appropriate remuneration – so that all of those who contribute to the invention share in its success.
- **The ability of recipients to license inventions exclusively.** Universities should be free to grant exclusive licenses to their inventions. Indeed, without exclusivity, companies will be reluctant to take licenses and invest in commercializing the invention, as others would then be able to license the invention and benefit from the work already done to commercialize it. However, universities should not be able to transfer or sell their inventions outright. If inventions are transferred to other entities, it will complicate the government’s ability to determine how/whether they are utilized. Also, universities generally have incentives to license to the company that will make the best use of the invention (and generate the highest royalty stream); by contrast, private entities often have other competitive considerations. Transfers of ownership to a patent management organization affiliated with the research institution should be permitted, as they are basically acting in place of the university.
- **Reporting requirements on institutions and the government.** Research institutions should be obligated to report their inventions to the government within a set period of time. This will ensure that universities establish a system of tracking government-funded inventions and make timely elections to either patent them or let rights in the invention remain with the government. It will also enable the government to determine whether and how inventions are being used. In addition, the government should in turn be obligated to publish aggregate reports of the

information it has received from research institutions, which will help in assessing the success of the policy.

III. Benefits of the Bill

With this legislative framework, and the resulting system of commercialization of government-research, will come economic benefits. After all, pure research requires further development to be commercialized into a product or service for the market. With the incentive to commercialize technology provided by patent protection and licensing, society will realize the following benefits:

- **Legislation will help the government translate its research spending into economic growth.** India invests substantial sums in research by academic institutions and others, in order to promote scientific development and improve the lives of its citizens. However, with enactment of the Bill, India's research funding can also contribute to economic growth. By enabling recipients of government funding to patent resulting inventions, India can facilitate the licensing out of the new technology to companies that will develop commercial products and services based on the technology and create new markets, driving sales and employment. It also will help build export-oriented industries and be an incentive for increased foreign direct investment. To take just one example from elsewhere in the world, in 2002, 39 Chinese university start-ups conducted IPOs.
- **Royalties will benefit educational institutions, increasing technological innovation and the growth of a skilled workforce.** Research institutions that develop inventions with government funding will receive licensing royalties. Those royalties, in turn, will help fund further research, improve facilities, and provide additional educational opportunities. In turn, this enhances the country's level of technological innovation and promotes the development of a skilled workforce, able to start up small businesses and drive economic growth.
- **Government will benefit directly via increased tax revenues.** When companies commercialize technology developed as a result of government-funded research, they develop new lines of business. In turn, this leads to increased sales and employment, increasing the tax revenues received by the government.
- **The people of India will benefit directly by receiving new products and services.** The goal of companies is to deliver new products and services that will be used by the people of India and potentially for global markets. Absent the ability of companies to receive effective transfer or licenses of technology, the inventions would at best be a source of academic interest and curiosity, but never enjoyed by the people of India.

IV. Responses to Criticisms of the Bill and Similar Legislation

Opponents of enabling protection of government-funded inventions will make arguments opposing legislation that enables it. Below are counterarguments to common criticisms of the Bill.

- **Government funds the research, so the government should keep all rights to resulting inventions.**

Response: Where the government holds the IPRs in research that it funds, there is a risk that the research will never be commercialized. In order for government ownership and control to be effective, the government would have to operate technology transfer offices, and enter into license agreements with the private sector on a timely basis. In addition, there is a risk that political considerations may lead the government to feel pressure not to provide exclusive licenses, which in turn could impair commercialization of the technology. Rather, the government can best achieve its goals of using research funding to develop technology that helps drive academic growth by enabling research institutions to patent inventions and give them the incentives to license to the entity or entities most likely to commercialize the technology successfully and generate the most royalties.

- **Because government-funded research is paid for by taxpayers, the resulting inventions should be free for all to use. Patenting such inventions results in an additional “tax” that citizens have to pay to use inventions they have already paid for with their taxes.**

Response: It is true that government-funded research is paid for by taxpayers. However, most pure research cannot immediately be turned into a product or service. Someone must determine how the research can be developed into a product or service consumers or businesses will pay for, and then must do the hard work of developing that product or service and marketing it. Companies will not have an incentive to engage in these needed investments unless they can be assured that competitors cannot copy their efforts, at little cost, and undercut their expected return. Patents on the underlying technology, combined with exclusive licenses, provide this guarantee. While it seems intuitive that government-funded research should be free for all to use, the practical effect of such a policy is that few if any inventions will be commercialized, depriving citizens of the benefits of such research as embodied in new and useful products and services. As the *Economist* noted, “Invention, as [*Technology Quarterly*] has stressed before, is in many ways the easy bit. A dollar's worth of academic invention or discovery requires upwards of \$10,000 of private capital to bring to market. Far from getting a free lunch, companies that license ideas from universities wind up paying over 99% of the innovation's final cost.”

- **If research institutions can patent government-funded inventions and provide exclusive licenses to private sector entities, then the government loses control over the inventions and there is no guarantee that they will be commercialized.**

Response: Appropriate controls can and should be put in place to prevent abuses – including the non-utilization of government-funded research. However, these must be carefully structured so as to avoid the temptations for the government to intervene when a technology becomes profitable. In such cases, the funding agency may seek to “march in” and take over the patent, so that it receives the resulting revenue stream. Ultimately, however, this would act as

a disincentive to commercialization of technologies. If research institutions know that the government has almost unlimited rights to take over patents on government-funded inventions, they are less likely to spend the significant sums needed to obtain patent protection in the first place – plus, the resulting uncertainty will make it harder for them to license patents to businesses. Narrowly-tailored safeguards to ensure that patents are practiced and not simply put on a shelf provide the proper balance between government oversight and the need for certainty by universities and businesses.

- **As government funding is designed to spur local economic growth, research institutions should be able to license inventions resulting from such funding only to local entities.**

Response: Patenting government-funded investments benefits India whether the invention is licensed to a local or foreign entity. If licensed to a local entity, it can help create a new business line that can bring new products and services to market and drive domestic economic growth and exports. If licensed to a foreign entity, it can still spur foreign direct investment, leading to additional inbound technology transfers and increased economic growth.

- **The proposed legislation will change the focus of university research from academic inquiries towards commercial pursuits, reducing the amount of pure basic research being conducted.**

Response: This is not the case. First, pure research can and often does lead to the creation of products that have significant commercial value, so it is not clear that universities would obtain greater licensing revenues by focusing on so-called commercial pursuits. Second, while royalties from licensed inventions will benefit research institutions, they will not come close to competing with or displacing government and donor funding, most of which will be directed to basic research. Third, longstanding university traditions of academic inquiry and the pursuit of knowledge will continue to have an important impact on research choices.

- **The proposed legislation merely imitates U.S. law and will increase the IP stranglehold on innovation.**

Response: Without question, the bill has roots in the U.S. Bayh-Dole Act – but that is only because of the incredible effect the Bayh-Dole Act has had in bringing innovations to market and growing start-ups. When the Bayh-Dole Act was enacted in 1980, only 390 patents were awarded to universities, and universities and other recipients of government research funding did not have an incentive to see their knowledge commercialized. The result of Bayh-Dole was a biotechnical and IT revolution. Universities received 2,725 patents in 2005, and between 1980 and 2002 launched 4,320 start-ups, 70% of which are still in existence.

As for the argument about an IP stranglehold, that represents a misunderstanding of how IP rights interact with development. The traditional concern has been that IP leads to a transfer of revenue from developing countries, which pay for licenses, to developed countries, which have the IP. But in this case, the IP will be created in India. It is Indian research institutions that will

reap the benefits of license revenue. And, as a result of the domestic industry provision, it is Indian companies that will have the first shot at developing domestic and export businesses built on the government-funded IP. The bill will lead to the development of a rich local base of IP to arm Indian companies as they compete in the world marketplace and cross-license IP with other enterprises around the world.

A great example of how IP promotes economic development, albeit in a different context, is Costa Rica. As few as twenty years ago, Costa Rica's principle exports were coffee and bananas. Today, its leading exports are computer chips (manufactured by Intel) and medical devices (manufactured by Baxter). It is intellectual property rights that make this possible – companies know their innovations will be protected and are willing to make foreign direct investment that in turn drives exports and a positive balance of trade.

V. Position on Specific Aspects of the Bill

Although the draft Bill is a great start, we would note a few areas where we think some amendments would make it even better. These proposed changes include:

Ensuring protection for software IP rights. We understand that “software” was added to the definition of intellectual property in the most recent drafts of the bill. This inadvertently suggests that software is a *sui generis* form of IP, as opposed to being protected under patents, copyrights, and trade secrets. (Although like many countries around the world, India does not recognize software patents per se, it does recognize computer-implemented inventions that otherwise meet the criteria for patentability.) To address this, we would ask that the government either (a) also include copyright among the types of IP covered, or delete the term “software”, as patent protection is available for computer-implemented inventions.

Reasonable requirements around utilization. Under the draft Bill, failure to make the invention available to the public on reasonable terms and conditions would constitute a failure to utilize. We would ask that this language be amended to ensure that recipients of government funding have a reasonable opportunity to utilize the invention once it gains IP protection, and before the government exercises its “march in” rights to take over rights to the invention. Otherwise, there will be a significant temptation for the government to claim rights with respect to profitable or valuable technologies based on stringent interpretation of the requirements.

Required terms in agreements between government agency and recipient. The Bill includes a model agreement between government agencies and funding recipients in Schedule I; however, use of this agreement is not mandatory. If the agreement in Schedule I is not mandatory, then agreements between agencies and recipients should be required to include certain minimum provisions; to ensure that rights and responsibilities addressed by Schedule I are clearly delineated. An even better way of achieving this objective may be to state that the requirements will be enacted by regulation. That way, as commercial agreements evolve, it is not necessary to amend the law, but simply to promulgate a new regulation.

Narrow the right of refusal. As currently drafted, this right is very broad. Moreover, there is (i) no formal requirement to determine that one of the conditions for exercise of the right exists, (ii) no obligation to report on how frequently the right is exercised and in what circumstances, and (iii) no agency charged with overseeing that the right is exercised properly. We believe that these controls should be added in order to ensure that the right is properly exercised.

Amendment of the national industry preference requirement. As currently drafted, this section provides that when a recipient or its assignee gives an exclusive license is given to use or sell an invention in India, it must provide that the licensee will substantially manufacture the resulting products in India. This requirement can be waived by government departments on a case-by-case basis. Where markets for technology and products are globalized, licensees need to be sure that they have the broadest possible range of options when it comes to developing the technology and bringing it to market. The government of India and its people will benefit from getting licensing royalties from the use of the technology. They will also benefit by having access through a free and open international trading system to the product no matter where it is made.

By requiring local manufacture, the people of India may be disadvantaged in either seeing the technology not used (if the local manufacturing requirement is unattractive to potential licensees) or having the product be more expensive if it could be made more efficiently in a location outside of India. Certainly, India is a very attractive location for manufacture of products – including those intended for a global market. Companies may very well choose to manufacture locally using local-origin technologies. But that should be a decision that is taken on the totality of conditions and not be subject to an artificial local manufacturing requirement.

Obligation of confidentiality on the government. There is a need to impose an obligation of confidentiality on government agencies regarding disclosures made by funding recipients prior to application for IP protection. Without such a requirement, the information provided by the recipient might be disclosed by the government agency, making the invention ineligible for patent protection in India or elsewhere.

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We appreciate the opportunity to share our thoughts on the Bill, and the benefits that its enactment will bring to India and its economy. For further information, please do not hesitate to contact

FICCI at **[insert contact details]**.