The New R&D Tax Credit Scenario

By Charles G. Goulding, Charles R. Goulding and Raymond Kumar

Charles G. Goulding, Charles R. Goulding and Raymond Kumar discuss major changes affecting research and development in the United States over the last few years, including the open-source R&D model, the impact of recent legislation and the challenge American companies face from China.

The verification and documentation process for eligible research and development (R&D) tax credits are changing in response to the evolution of R&D itself. In this article, the authors discuss major changes to R&D including:
(1) the new, "open-source" R&D model;
(2) the impact of the America Invests Act on R&D documentation; and
(3) the Chinese R&D challenge to American companies.

The Federal Research and Development Tax Credit

The Research and Development Tax Credit, federally enacted in 1981, allows a credit of up to 13 percent of eligible expenditures for new and improved products and processes. Qualified research must meet the following four criteria:
1. new or improved product, process or software;
2. technological in nature;
3. elimination of uncertainty; and
4. process of experimentation.

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Eligible costs include employee wages, cost of supplies, cost of testing, contract research expenses and costs associated with obtaining a patent.

The Changing Model of Innovation

Historically, the U.S. model for innovation has consisted of large companies performing research and development in centralized locations. A famous example is the Kodak Research Laboratories, founded in 1912 by Eastman Kodak. Over the past century, this facility produced thousands of patents and publications, helping Kodak develop the first 35mm color film as well as the world's first digital camera in 1975. In the absence of stiff competition, the in-house method of innovation, dubbed the "invention model," was sufficient for continued growth for many decades.

Recently, however, globalization has increased drastically the scope and pace of competition. Faced with slimmer margins, large U.S. companies saw the cost of innovation cut into their profits by greater and greater percents. Just as ominously, foreign countries began identifying, on a national level, the same drivers to future innovation as America. By the millennium, many large, established American companies saw their stock values tumble as investors doubted their

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adaptability. In order to compete in the new regime, U.S. firms had to find cheaper and quicker ways to innovate.

Open Source: The New R&D Paradigm

Studies show that the most fertile ground for innovation is often at the intersection of disciplines—knowledge from two or more fields combine to form a new idea that has the potential to either revolutionize those original fields or form a new discipline entirely.[1] The new, open-source R&D paradigm capitalizes on this truth, valuing outside perspective as much as in-house knowledge, with game-changing ideas as likely to come from the periphery of an industry—if not the proverbial peanut gallery—as they are from industry insiders. Rather than pump huge sums of money into in-house R&D initiatives, many firms are now accessing the knowledge and talent of a wide network of external parties. Indeed, a good metaphor for this transformation comes from open-source software development, the core themes of which—transparency, permeable access and collaboration—are the bedrock of how America's best companies now conduct R&D.

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Like so many other facets of the economy, the internet has facilitated this revolution. To access outside thinking, companies "broadcast" their problems. Sometimes this is achieved by traditional employment contracts, and other times via cash rewards. A recent case, recounted by Harvard Business School, is illustrative of the latter. A U.S. biotechnology firm was tasked with developing a method to quickly and easily detect DNA sequences. The firm's in-house talent concluded that the task was impossible. Rather than quit, however, management elected to put the problem to a collection of 574 outside scientists for a cash prize. Within a month, a scientist from Finland, trained in an unrelated field, solved the problem, which in turn led to a new knowledge domain and a patent for the biotech firm.

Not Just for Software

The open-source R&D paradigm can be applied to fields outside of software development. In their study "The Value of Openness in Scientific Problem Solving," the authors suggest that such a model applies to industries ranging from biotech to agrochemicals.[2]

In addition to the example above, another nonsoftware case study is Proctor and Gamble's Connect and Develop model.[3] In 2000, facing rising innovation costs and a plummeting stock, P&G recognized that its once tried-and-true model of in-house invention was failing. The company estimated that for every scientist they employed, there were 200 equally qualified individuals outside the company. They set a goal of 50-percent innovation from external resources and cultivated permeable boundaries to facilitate knowledge transfer. Over the past decade, P&G's percentage of innovation from outside resources has climbed from 15 percent to 35 percent; meanwhile, R&D investment as a percent of sales has fallen from 4.8 percent to 3.4 percent while the share price of P&G stock has doubled.

For pharmaceuticals, R&D costs have tripled since 1990, while the number of new drugs approved has not risen proportionally.[4] The high costs of R&D, coupled with the risks involved, have led to widespread "externalization" in recent years. Companies like Pfizer have partnered heavily with academic institutions, while GlaxoSmithKline has externalized 50 percent of their "discovery" costs.[5]

Other major U.S. corporations have followed similar paths: Apple with its open-source "app" development platform; IBM with its Open Collaborative Research Program and International Technology Alliance, initiatives that work hand-in-hand with academic universities and industrial research laboratories.

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The Economics of Open-Source R&D

As the open-source model has matured, R&D activity has shifted from large to small and mid-sized companies. In the early years of open source, outsiders were not always motivated financially. Wikipedia does not pay the average contributor to its encyclopedia, yet the website remains flush with up-to-the-minute content. In some realms of open source, there has been, and may continue to be, satisfaction simply in the act of participation where such participation had previously been impossible, or in the name recognition certain achievements provide.

Money has played a key role in certain instances of open-source innovation. As Karim Lakhani of Harvard Business School notes, money has been a significant correlate in many open-source solutions, often coming in the form of a reward or grant, such as the Netflix Prize, a $1,000,000 challenge to best by 10-percent the success rate of Netflix's own film-suggesting algorithm. After two years of issuing the challenge, a joint team of international researchers called BellKor's Pragmatic Chaos did just that.

Another example is the Bright Tomorrow Lighting Prize, a $15,000,000 competition to incentivize energy-efficient lighting products, funded by the Department of Energy.[6] These examples illustrate the shift in R&D from large to small and mid-sized companies—from a smattering of large, centralized, isolated invention houses to an interconnected web of players large and small.

American Invents Act Will Increase R&D Tax Credit Documentation

On September 16, 2011, the U.S. enacted a major new patent law entitled the America Invents Act.[7] This law changes long-standing U.S. patent eligibility from "first to invent" to "first to file." This law is expected to greatly increase the number U.S. patent registrations, and it conforms the U.S. patent system to the majority of international ones. The new law has caused a huge increase in the demand for patent attorneys, according to the New York Times article "New Law Creates Demand for Patent Specialists."[8] More patent registrations will facilitate more R&D tax credit documentation since the discipline of assembling support for the patent procurement process will provide excellent, ready-made R&D tax credit documentation. Moreover, the patent registration process serves as a *de facto* R&D tax credit safe harbor since the U.S. Patent Office arm of the federal government has determined that the results of the R&D culminating in a patent is by definition innovative and nonobvious.

The Chinese Challenge

A look at China's R&D policies suggests the types of areas where innovation is likely to continue. In 2009, China surpassed Japan as the country with the second highest investment in industrial R&D, contributing 12.8 percent to the worldwide total. The Chinese government has been very explicit in its support of R&D, identifying seven key technologies it wishes to support: advanced materials, alternative energy, biotechnology, high-end manufacturing equipment, new generation manufacturing equipment, alternative fuel cars and environmental protection. To quote Marty Grueber, co-author of Battelle-R&D Magazine's 2011 Global R&D forecast: "The continued expansion of R&D in China is both inspiring in magnitude and worrisome from a U.S. competitive perspective. The Chinese are doing everything in their power to grow and develop through an increasing understanding and emphasis on research and technology. Even most of their highest ranking political leaders are engineers."[9] While America remains number one in global R&D spending at 33.4 percent, its continued dominance will depend on successful adaptation of the new open-source R&D regime. Professionals in the fields mentioned above, especially those that easily lend themselves to open-source ingenuity, should begin thinking about how the R&D tax credit can help sustain their firms within such a model.

Conclusion

Tax advisers that recognize change in the U.S. R&D model will be able to assist a wide range of new, smaller entrants in utilizing the credit. To provide cost-effective R&D tax credit advice, these same tax advisors have to be conversant with the collaborative tools provided by the new innovation.

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Endnotes

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