PROMOTING KNOWLEDGE-BASED ECONOMY ACTIVITIES THROUGH PERSONAL INCOME TAX INCENTIVES

ARTICLE

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PURPOSE

THIS PAPER STUDIES PERSONAL INCOME TAX INCENTIVES AS STIMULI FOR ECOnomic development. A number of recent initiatives are considered for developing an entrepreneurial and innovative ecosystem in the Commonwealth of Puerto Rico. In light of these initiatives, I analyze Puerto Rico's long history of tax driven incentives for economic development and propose to refocus our tax incentive polices in times when pursuing individual human capital is the key to the future.

Thousands of trees are killed annually to allow Puerto Ricans to express their views on dozens of *necessary* changes in U.S.-Puerto Rico relations. The argument goes that unless substantial changes are obtained in the proposer's preferred direction, our socio-economic development is doomed to failure. That is, the foremost direct variable on which our well-being depends is extensive change in the distribution of political powers. While cynical thoughts are not easy to avoid, a review of our political parties' proposals for the 2008 election shows that *solving* the status issue is a primary goal of most politicians. This work rejects that belief. As I see it, changes in the distribution of powers between Puerto Rico and the U.S. will have a meaningless impact on improving our immediate well-being. No one would challenge that the social modernization experienced by the island during the second half of the last century was not caused primarily by the political changes obtained under the Federal Relations Act[1] or the political movement driven by the Popular Democratic Party, but ra-

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ther, by the economical well-being brought about by industrialization, coordinated efforts to foster businesses, and a generous investment sparked through tax incentives.

It is time again to jumpstart the economy by taking advantage of Puerto Rico's primary taxing power within the context of the twenty first century challenges.[2] In addition, the other major premise of this paper is that the government of Puerto Rico has all the powers needed to implement the policies which I recommend. I herein submit that forging a generation of world-class Puerto Rican entrepreneurs and innovators, while incentivizing foreign entrepreneurs and innovators to establish locally, should be the most important undertaking of our political leaders.

Puerto Rico's economic development during the last third of the twentieth century was primarily driven by section 936 of the U.S. Tax Code that exempted U.S. corporations from paying federal taxes from wealth created on the island. This tax incentive was particularly useful to economic development efforts by stimulating labor-intensive manufacturing that helped ease the workforce's transition from agriculture and prevented massive unemployment.[3]

I. WHY KNOWLEDGE BASED ECONOMY ACTIVITIES?

Current global economic trends and the growing aspirations of the people of Puerto Rico do not allow for our economic development model to rely on labor-intensive manufacturing operations and section 936 incentives are no longer available.[4] The new global economic reality values human capital over technolo-

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1 Puerto Rican Federal Relations Act, 48 U.S.C. §§ 731-916 (2006).

2 Puerto Rico is not included in the definition of *State* under the U.S. Internal Revenue Code. Therefore, Puerto Rico residents and corporations are not subject to U.S. Federal Income Taxes, 26 U.S.C. § 7701(a)(9). Since 1901, Congress has had the power to exempt Puerto Rico from federal taxes. *See* Downes v. Bidwell, 182 U.S. 244 (1901).

3 Steven J. Davis & Luis A. Rivera-Batiz, *The Climate for Business Development and Employment Growth*, *in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH 283 (Susan M. Collins et al. eds., 2006):

> In practice, section 936 tax subsidies proved most attractive to capital-intensive manufacturing industries that produce proprietary products with big price markups over marginal costs. Products of this type facilitate tax minimizing transfer process and profit shifting between jurisdictions with different effective tax rates.
>
> According to a study by the U.S. General Accounting Office...section 936 tax subsidies to U.S. corporations with Puerto Rican operations amounted to $2.6 billion in 1989, or 13 percent of Puerto Rico's GDP. One view is that subsidies of this magnitude profoundly influenced Puerto Rico's economy and industrial structure. Another view is that section 936 subsidies mainly reflect paper transactions with little impact on the Puerto Rican economy but with a high cost to the U.S. Treasury.

Id.

4 *See* Small Business Job Protection Act of 1996, Pub. L. No. 104-188, 110 Stat. 1755 (1996).

gy or fixed assets. Some have coined it the "Software" society, or the "brain-based society."[5] The goal should be to try to accumulate brain power in order to attract other capital factors necessary for economic development. Establishing knowledge-based economy (KBE) activities in conjunction with an entrepreneurial ecosystem are the sole largest generators of high growth *gazelle* firms, the highest creators of new jobs. A recent study by The Kauffman Foundation, the world's leading Think Tank on entrepreneurial research, shows that "[f]ast-growing young firms, comprising less than [one] 1 percent of all companies, generate roughly [ten] 10 percent of new jobs in any given year."[6] Because this kind of venture is the primary creator of new jobs, all governments should focus on providing the incentives needed to establish them within their jurisdiction. In fact, the study concludes that the best way to promote high growth entrepreneurial ventures is by providing both tax incentives and attracting entrepreneurial immigration, which are the two targets aimed by this paper.[7]

These are not new topics for Puerto Rico. Economic literature has recognized the need for swift action in this direction and the relevant comparative advantages of the island. In 2006, Brookings Institution partnered with the Center for the New Economy, an economic Think Tank in Puerto Rico. Their first project was to present a profound study of Puerto Rico's economy that included recommendations for restoring growth. An important part of the recommendations urged incentivizing KBE activities.[8]

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5 JONAS RIDDERSTRÅLE & KJELL NORDSTRÖM, FUNKY BUSINESS FOREVER: HOW TO ENJOY CAPITALISM 86 (3d ed. 2008).

6 Kauffman Foundation Research Series: Firm Formation and Economic Growth, High-Growth Firms and the Future of the American Economy 2 (2010), http://www.kauffman.org/uploadedfiles/high-growth-firms-study.pdf.

7 *Id*. The paper recommends that governments:

> Remove barriers that potentially block the emergence of high-growth companies. Focus on *taxation*, regulation, *immigration*, access to capital, and *academic commercialization. Target immigrant entrepreneurs and universities, which may be likely sources for high-growth firms.*

Id. at 2 (emphasis added).

8 William J. Baumol, *Comment on* Barry P. Bosworth and Susan M. Collins, *Economic Growth*, *in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH, *supra* note 3, at 73:

> Silicon Valley is a much envied prototype, and the United Kingdom, Germany, Japan, and others are attempting to follow its example. According to the *Economist,* as of 1999 only Israel was close to succeeding, though Ireland is obviously also doing well in this direction. This fourth industrial revolution sells one type of output –the product of brain power. If the products are good enough, they make it possible for an economy to have high wages and yet remain fully competitive.
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> But what does all this have to do with Puerto Rico? The answer is that in some respects the island already has a running start. Notably, according to World Bank data, it is ahead of every economy except the United States in terms of the share of the college-age population that is attending institutions of higher education. A higher percentage of its young people attend college than in Germany, France, the United Kingdom, Canada, or

Drawing from Puerto Rico's industrial experience and composition, one can identify specific areas of expertise and comparative advantages. One such area is biotechnology and life sciences. Studies have demonstrated the growing trends, potential, and remarkable size of biotech markets worldwide.[9] Therefore, the areas of economic activity and scientific research that I propose to incentivize are concentrated in these sectors.

By locally developing science and by creating a community of start-ups from the commercialization of locally developed science, the power balance in Puerto Rico's economic model could begin returning to the island. In the past, the model was directed towards attracting external capital while exporting power and control of economic activities.[10] Puerto Rico is a world class devices and

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> any other leading economy. This by itself, however, is not enough. Standards of research and teaching will have to be upgraded to match those of the world's education leaders. The faculties, too, will need further training and rewards that provide incentives for research and the acquisition of research skills. One or two decades may be required to carry out this task effectively.... Careful planning will be required to design a program demonstrably capable of reaching the goal. *Its accomplishment will require acceptance of powerful and demanding incentives that, at least at first, probably will not be politically popular.* And the required planning must begin now if the capacity to attain a place at the forefront of world information activity is to be reached in Puerto Rico before the malaise evident in manufacturing becomes too great a handicap and prevents provision of the resources necessary for the island to compete effectively in this latest industrial revolution.

Id. (emphasis added).

9 ERNST & YOUNG, BEYOND BORDERS: GLOBAL BIOTECHNOLOGY REPORT, NEW MILESTONES AND MILES TO GO 5 (2006), http://www.hungarianbiotech.org/html_hun/doc/konyvtar/2006_Beyond_Borders_3-28_Final_.pdf, states:

> Collective revenue of the world's publicly traded biotech companies grew by 18 percent in 2005, reaching an all-time high of $63.1 billion and crossing the $60 billion threshold for the first time. The overall rate of increase was comparable to the sector's performance in previous years –revenues increased by 17 percent in 2004. But the industry's development was more evenly distributed this year, as the European sector finally emerged from a lengthy restructuring, and the industry continued to post impressive revenue increases in the Americas and Asia-Pacific. The United States led the way, as companies enjoyed more product approvals, reflected in impressive product sales. But the numbers were no less significant in other parts of the world.

Id.

10 JAMES L. DIETZ, ECONOMIC HISTORY OF PUERTO RICO: INSTITUTIONAL CHANGE AND CAPITALIST DEVELOPMENT 241 (1986):

> Despite the striking gap between theory and reality, Operation Bootstrap from its beginning was based, at least implicitly, on the assumption that self-interested behavior does lead to public benefit, and on the further assumption that economic growth benefits all classes and groups – i.e., the "trickle-down" theory that the benefits of a growing output gradually spread throughout the social hierarchy. These assumptions, even if not always clearly articulated or well understood, are what gave justification to Puerto Rico's industrialization via the market, based overwhelmingly on self-selection by U.S. firms. As a consequence, external capital's interests have continued to shape the characteristics of the Puerto Rican economy.

pharma-manufacturing hub that produces about 50% of medical devices sold in the U.S., has extensive presence and manufacturing plants of the world's leading pharmaceutical companies, and produces over 9,000 annual degrees in sciences and engineering.[11] Data shows that Puerto Rico already has a critical mass and highly trained human capital, necessary for KBE activities and the local industrialization of R&D.[12] In fact:

> For more than four decades, Puerto Rico has been a major player in the pharmaceutical industry. The island ranks second, behind New Jersey, in terms of the number of people employed in Life Sciences related industries (more than 40,000 individuals) accounting for more than 8% of all workers employed in this sector in the United States.[13]

Also, 16 of the 20 top selling drugs in the world are manufactured here.[14] Compared to other major world jurisdictions, Puerto Rico hosts an important number of clinical trials in Phases I and II of drug and medical procedure development. The National Institutes of Health (N.I.H.) reports that Puerto Rico had 40 trials in 2006, more than Ireland and Singapore, two models which I describe further in this work.[15] Nevertheless, the long term stability of the pharmaceutical industry in Puerto Rico and the expectation for continued growth in the life sciences and biotech sectors is uncertain at best. Concerns include the "fast pace of patent expiration and the slow rhythm of new product introduction."[16] There is a direct correlation between the amount of new products introduced for manu-

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Id.

11 Thomas F. Farb, *Message from the Executive Director: From a "Working Economy" to a "Thinking Economy"*, PUERTO RICO SCIENCE, TECHNOLOGY & RESEARCH TRUST, http://www.prsciencetrust.org/trust_profile.html (last visited Jul. 17, 2010).

12 Helen F. Ladd & Francisco L. Rivera-Batiz, *Education and Economic Development, in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH 220 (Susan M. Collins et al. eds., 2006):

> Compared with their United States counterparts, students who graduate in four years from Puerto Rican institutions tend to be focused on science, technology, and business. Of the students who graduate in four years and received their degrees in Puerto Rico in 2000-01, 55.2 percent were enrolled in the computer science, engineering, natural science, and business fields, while the equivalent proportion for U.S. students was only 37.8 percent. These data suggests that many university students are responding to signals provided by the labor market on the island. Indeed, the growing pharmaceutical, biotechnology, electronics, transportation, finance and banking sectors all have increased the demand for the technical and professional workers that Puerto Rican universities are churning out in high numbers.

Id.

13 TORO FERRER ARCHITECTS, PSC., ET AL., ECONOMIC AND URBAN DESIGN SCENARIOS: THE SAN JUAN KNOWLEDGE CORRIDOR PHASE II SUMMARY REPORT 21 (2007).

14 *See id*.

15 *Id*.

16 *Id*. at 22.

facturing and the reduction in total sales. Therefore, the argument goes that by improving the R&D capacity in the island, a steady flow of new products for local manufacturing could be established.[17]

Puerto Rico would not be acting on a vacuum of experiences and information from which to guide its development of biotechnology and life sciences initiatives. Successful stories of this kind of efforts are easy to find.[18] Drawing from our existing industrial base, Puerto Rico should bet on developing the products we already have experience manufacturing locally and moving the entire value added chain to the island. Puerto Rico offers excellent conditions for investment and trade development in the R&D sector as it has an extremely open and well regulated economy with direct access to the United States.[19]

> "Knowledge Economy" in Puerto Rico
> should be a new economy of education,
> research ideas, innovation and technological creativity.
> *This will allow creating a cluster to spur further development.* [20]

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17 *See id.*

18 *Id.*:

> A study of the effect of the College of Medicine, a standalone practice facility conducting research and development center in Orlando, Fl., would create an immediate impact of $1.4 billion and the creation of 6,000 additional jobs in the region. With the growth of a related life science industry or cluster, the economic impact could eventually approach $6.4 billion and mean the creation of up to 25,000 jobs.

Id.

19 Barry P. Bosworth & Susan M. Collins, *Economic Growth*, *in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH, *supra* note 3, at 29:

> The island enjoys a number of features that are widely viewed as critical to sustaining growth. Contemporary literature on growth stresses the benefits of openness to the global economy. These include the strong competitive pressures and economies of scale that result from a larger market as well as enhanced opportunities to gain from the experiences and innovations of others. In this respect, Puerto Rico has long been among the most open of economies, with no significant restrictions on the free flows of people, goods, and financial capital between the island and mainland United States. Recent literature also emphasizes the significance of stable laws and institutional arrangements to protect property rights and promote entrepreneurial effort. The basic U.S. legal and regulatory framework has applied in Puerto Rico for most of the past century. In particular, investors are covered by U.S. intellectual property laws. A well-educated workforce constitutes a third critical ingredient for economic growth; and again, Puerto Rico stands out, with levels of educational attainment similar to those on the U.S. mainland.

Id.

20 TORO FERRER ARCHITECTS, PSC., ET AL., ECONOMIC AND URBAN DESIGN SCENARIOS: THE SAN JUAN KNOWLEDGE CORRIDOR PHASE II SUMMARY REPORT 10 (2007) ("providing a clear strategic agenda for future development within the corridor is important to establish a comprehensive Life Sciences cluster "). *See also* Antonio García Padilla, *Drugs, Patents, Research and Industrial Growth in Puerto Rico*, SAN JUAN STAR, Dec. 20, 2007, at 73.

II. THE PUERTO RICO KNOWLEDGE CORRIDOR

Puerto Rico has taken several decisive steps towards developing activities, yet these have failed to make it a leading jurisdiction. Incentives, including tax policy review, are needed across a wide spectrum that also includes education.[21] Puerto Rico should draw from its relatively high educational attainment for these purposes.[22] Some universities are increasing their investments in science and technology R&D in an effort to integrate with the substantial manufacturing sector in these areas.[23] Extended training in Science, Technology, Engineering and Math, together with efforts in research commercialization and technology transfer at the university level and incubation efforts are also essential to economic development.[24] Within these efforts, the Knowledge Corridor is the flagship project for KBE activities in Puerto Rico:

> The aim of the Knowledge Corridor is to fuel economic growth and innovation by capitalizing upon Puerto Rico's growing life sciences industries. . . [and developing] a new "Science City," a state-of-the-art enclave that integrates educational and research campuses with commercial laboratories, vibrant mixed-use

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21 Baumol, *supra* note 8, at 73-74:

> Although the government of Puerto Rico has granted tax incentives for research and development, these are not enough. Some pharmaceutical companies have begun to conduct clinical trials, but this activity is still in its infancy. Both faculty and students at university levels lack incentives to conduct research. Far from the arrangements in U.S. universities, research funds in the island's educational institutions are scarce, and salary incentives for faculty members with special research accomplishments are lacking, as are student performance incentives. . . . But the greatest challenge the island faces now and in the near terms is vision. Where does the island want to be in twenty years? That decision will determine the necessary strategies.

Id.

22 Helen F. Ladd & Francisco L. Rivera-Batiz, *Education and Economic Development, in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH, *supra* note 3, at 193-94:

> Puerto Rico [is] in the upper tier of nations ranked by their proportion of college educated adults. As of 2000, the United States topped the list, with 28 percent of adults aged twenty-five to sixty-four having been awarded a college degree. Puerto Rico's 20.2 percent put it [now] below Norway and the Netherlands but above or tied with all other Organization for Economic Cooperation and Development member nations and well above developing countries with equivalent levels of per capita income.

Id.

23 *Id.* at 237.

24 Carlos E. Santiago, *Comment, on* Helen F. Ladd & Francisco L. Rivera-Batiz, *Education and Economic Development, in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH, *supra* note 3, at 246-47.

neighborhoods, efficient transportation networks and dynamic public open spaces.[25]

In August 18, 2004, Puerto Rico enacted the Science, Technology, and Research Trust Act,[26] which delegates the development and planning of KBE activities to an independent legal entity by enabling the President of the University of Puerto Rico and the Secretary of Economic Development to grant a trust deed.[27] The legislative intent was to redirect Puerto Rico's economy towards modern trends in science, including biosciences, genetics, and medical devices; technology; and IT, which includes broadband, video and multimedia technologies. The Act expressly refers to Chile, Ireland, Singapore, and Thailand as examples of massive and decisive support to KBE efforts. Concrete efforts towards promoting and incentivizing R&D in these areas would result in direct economic development as breakthroughs would be easily commercialized and exploited. Investing in knowledge and intellectual property would better position the island for the challenges of the 21st century's global economy. In order to insert the public sector in these efforts, the Trust was delegated with the responsibility to design a public policy and to invest, finance, and promote related activities, while attracting other entities to do the same. The Act further provides for the Trust's legal powers and its' funding sources. The most important aspect of the Act for this article's purpose is that it recognizes a series of *Qualifying Activities* that should be promoted as a matter of public policy. The tax incentives I recommend should draw from these activities.[28]

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25 TORO FERRER ARCHITECTS, P.S.C., ET AL., ECONOMIC AND URBAN DESIGN SCENARIOS: THE SAN JUAN KNOWLEDGE CORRIDOR PHASE II SUMMARY REPORT 12 (2007).

26 Puerto Rico Science, Technology, and Research Trust Act, Pub. L. No. 214, P.R. LAWS ANN. tit. 23, §§ 695-695i (2006 & Supp. 2010).

27 The Deed of Declaration of Trust was authorized by Jaime Arturo Riera Seivane, Notary Public, on Dec. 31, 2004. The appearing parties were Hiram Ramírez Rangel in his capacity as Secretary of the P.R. Economic Development Department and Antonio García Padilla in his capacity as President of the University of Puerto Rico.

28 Pursuant to Article 2 of the Act, P.R. LAWS ANN. tit. 23, § 695 (2006 & Supp. 2010), these are:

> (1) Science and technology research or development activities in the following areas:
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> (A) Information and communications technology.
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> (B) Creation of data, video and telephone convergence protocol.
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> (C) Infrastructure of information science, data, video and multimedia transmissions.
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> (D) Development of programs that promote the use of new methods to access health systems, to wit: telemedicine and distance education.
>
> (E) Electronic commerce and programming developed in digital language code and incorporated in a direct use computer-(application service software).
>
> (F) Research processes and technology and development of medication including, but not limited to, molecular biology, genomic science, proteomic sci-

The Trust was conceived as an independent, continuous effort, separate from governmental control and directed by its eleven (11) trustees, only five (5) of which are ex-officio government officials from the areas of economic development. Currently, the other six (6) trustees are scientists and educators. The Trust is intended to fill a void of the Puerto Rico Industrial Development Company (PRIDCO) in the area of R&D, since PRIDCO's main focus is to support industrial infrastructure, buildings and incentives.

R&D enterprises and startups require a different offering of government services. Initial steps have been taken to create a comprehensive database of KBE activities and participants in order to understand the local industry and advertise the island's capabilities and resources abroad.[29] Also, the Trust is analyzing possible joint efforts with the University of Puerto Rico (U.P.R.) in order to improve its intellectual property policies and facilitate knowledge transferring and research commercialization.[30] The U.P.R. would better serve KBE initiatives by visualizing itself as a business partner and promoting research that is both good for teaching and is either directly commercialized or licensed. Puerto Rico's business incentives have historically been mainly available to manufacture and

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> ence, genotype sequence analysis and technology, combinational chemistry, robotic software, bio-information science, biochemistry, molecular oncology, genomic pharmacology, biological markers, molecular toxicology, tissue engineering, medicinal chemistry, micro-fluidics and models of diseases.
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> (H) Clinical research and development, integration of experimental and computational biology, pharmacology, molecular toxicology, animal models.
>
> (I) Delivery of medication and related fields.
>
> (J) Investigation and development of bio-manufacturing processes, biocatalysis, development of chemical processes; manufacture and bioprocesses of protein and chemical syntheses manufacture.
>
> (K) Molecular phenotype technology, discovery of medication and nanotechnology development.
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> (2) Education, training and professional development in the fields of research or development in science and technology.
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> (3) Rendering of services and technology including, advisory, consultative, and studies, analysis, collection, management and administration of intellectual property, implementation and management of incubators and financing of innovations and inventions.
>
> (4) Attracting scientific human resources to Puerto Rico, under the terms defined by the Council of Trustees.
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> (5) Construction and development of scientific parks or development of the adequate social infrastructure for research or development of science and technology activities.

Id.

29 Interview with Luis Enrique Rodríguez, Former Executive Director, Puerto Rico Science, Technology & Research Trust and Professor of Law at the University of Puerto Rico Law School (Mar. 10, 2010).

30 *Id.*

similar industrial ventures that require capital expenditures in fixed assets via investment credits and income tax credits. However, a KBE requires less tax expenditures in fixed assets and investment tax credits and more direct investments in R&D startups and education. In order to do that, the Trust should seek to invest in providing seed money for startups that cannot benefit from the current incentive structure, since there is little to do with tax credits when there is no income to offset and the secondary market is deeply affected by deteriorated economic conditions in Puerto Rico. Keep in mind that R&D operations are typically cost centers that generate no income. As such, tax credits for R&D operations have a market limited to entities with significant tax burdens. [31]

The Trust also seeks to support the U.P.R. in increasing and improving its scientist's critical mass by attracting proven scientists from abroad.[32] Promoting foreign scientists to establish in Puerto Rico through direct investments is a very efficient way of starting KBE activities in Puerto Rico, as many of these scientists would be chosen based on their track records, and an investment in one scientist pays for itself when additional grant money attracted by a researcher is spent locally. This process also creates a virtuous cycle where experimented scientists help train younger scientists that are recruited to become lab and research assistants.

Finally, the Trust's most ambitious project is to create the Puerto Rico Knowledge Corridor. The Knowledge Corridor has been planned as a one million square-feet lab space research park that will connect the U.P.R. Medical Sciences Campus -where the U.P.R. has recently build the Comprehensive Cancer Center, a joint project with M.D. Anderson- with the Molecular Science Building, which includes over 150,000 square-feet of state-of-the-art lab space and the U.P.R.'s main campus in Río Piedras.[33] The Knowledge Corridor's advantages are mainly based on the proximity to the island's pharma and life sciences industrial base and the U.P.R.'s wide production of human resources in the related areas.

Another important effort is the U.P.R.'s Bioprocess Development and Training Center (B.D.T.C.) in Mayagüez, which combines a biotechnology pilot plant and workforce training center, and will provide hands-on training and education

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31 Antonio García Padilla, *UPR's Role in Research, Economic Development*, SAN JUAN STAR, Mar. 21, 2007, at 41 (framing the importance of Puerto Rico's initiatives towards promoting KBE activities; most of which have been led by the University of Puerto Rico.). Other projects established by the University of Puerto Rico include the new science building in the Cayey campus, the Technology Complex in the Bayamón campus, and the Medicinal and Poisonous Plant pavilion in the Botanical Garden.

32 *Id*.

33 The future of the Comprehensive Cancer Center is unfortunately in jeopardy as its 2010-2011 budget has been reduced by more than 80%. *See, e.g.*, Yanira Hernández Cabiya, *A "reparar" el presupuesto,* EL NUEVO DÍA, June 26, 2010, http://www.elnuevodia.com/arepararelpresupuesto-730706.html. The Comprehensive Cancer Center of the University of Puerto Rico Act was created by Act No. 230 of Aug. 26, 2004, P.R. LAWS ANN. tit. 24, §§ 3365-3379 (2002 & Supp. 2008).

in bioprocesses as well as state-of-the-art research facilities for start-up companies. In the future, start-ups located within the Mayagüez incubator Vitec2, will be able to use lab space in B.D.T.C. Vitec2 is a one-stop venture development center where entrepreneurs establish start-ups and receive all necessary services in order to graduate. Like any incubator, Vitec2 provides working space near the world-class engineering and science campus of the University of Puerto Rico in Mayagüez. Companies in the incubator receive business, technical, legal, and organizational support. By paying a low rent, businesses receive a partner to work with on a road plan towards becoming independent from the incubator. Vitec2's experience is indispensable to understanding the local entrepreneurial ecosystem and its challenges. Vitec2 has been successfully in business for 10 years. In that period it has graduated 10 businesses which include 4 ventures in the aerospace engineering sector that have created over 1,500 employees in the west coast of Puerto Rico.[34] In doing that, their main challenges included the lack of funds for seed financing and low commercialization and technology transfer from what is currently being developed at the U.P.R. Mayagüez Campus. Although their business model is easy to replicate, the island still lacks a critical mass of scientists and entrepreneurs to fully realize the incubator's potential. Currently, there are several spaces for new ventures unoccupied within the incubator. Continued governmental intervention and sponsoring is essential to develop this kind of initiative.[35]

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34 Interview with Nelson Perea, Executive Director Puerto Rico Technoeconomic Corridor and Vitec2 (Feb. 26, 2010).

35 *See* TORO FERRER, ET AL., SCIENCE CITY MASTER PLAN: ECONOMIC DEVELOPMENT STRATEGIES, THE SAN JUAN KNOWLEDGE CORRIDOR (2007):

> In every exemplary case with significant numbers of start-ups, private and/or public seed capital funds, and often angel networks, were present. In states and communities with little traditional risk capital, state governments and the private sector had to fill the gap by creating seed and venture capital funds.
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> . . . .
>
> In order to fill the seed capital gap in Pennsylvania, the commonwealth seeded three private early-stage funds to meet the needs of enterprises affiliated with the Life Sciences Greenhouses.
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> The Commonwealth invested more than $100 million from its pension fund and its public venture capital company (Safeguard). Start-ups from CMU and the University of Pittsburg have access to these funds as well as a small "pre-seed" fund called the Idea Foundry, as well as funds from Innovation Works, part of the State's Ben Franklin Partnership. In Missouri, the State seeded four locally managed venture capital funds dedicated to biotech and medical companies; these funds leveraged capital totaling more than $400 million. Foundations and other private sector investors in St. Louis also established a small "pre-seed" fund called the Bio-Generator. Like Pittsburgh's Idea Foundry, the Bio-Generator provides value added mentoring and management services in addition to seed capital for very early stage firms and entrepreneurs. In Indiana, the Indiana Future Fund was capitalized with $75 million from multiple investors including State pension funds, pharmaceutical and other companies, several universities, and university endowment

Part of the reason behind Puerto Rico's delayed reaction to R&D trends worldwide can be blamed on the lack of a clearly defined plan, as leaders in the global KBE competition have shown. Some of these are Ireland, Singapore, and the Research Triangle Park in North Carolina. I will mention several key ingredients of their success that should serve as models to Puerto Rico's efforts. Ireland has a very articulate and well-defined economic development strategy. These initiatives began in 1998. After careful study, the Irish government concluded that "biotechnology and information and communications technology represented 'the engines of future growth in the global economy . . . . A world class research capability in selected niches of these two enabling technologies is an essential foundation for future growth.'"[36] In 2000, the Irish government established the Technology Foresight Fund and allocated a budget of €646 million.[37]

In 2003, Ireland enacted the Industrial Development Act of 2003, creating the Science Foundation Ireland (S.F.I.), which is responsible for funding scientific research and investing in researchers and research teams. Similar to Puerto Rico's Science, Technology, and Research Trust, the SFI has a clearly defined purpose and vision statement: "Ireland will be a global knowledge leader that places scientific and engineering research at the core of its society to power economic development and social progress."[38] This will be done by having S.F.I. "build and strengthen scientific and engineering research and its infrastructure in the areas of greatest strategic value to Ireland's long-term competitiveness and development."[39] The National Development Plan (N.D.P.) for the years 2007-2013, Ireland's complete government budget, provides for the allocation of €183.7 billion in 5 specific areas. The first two of said areas are Economic Infrastructure and Enterprise, Science and Innovation. Specifically, €9.4 billion would be invested in a Science, Technology and Innovation Programme and an Enterprise Development Programme.[40] The National Development Plan recognizes that "[i]ncreased productivity growth is a key determinant of long-term economic prosperity and of sustainable improvements in living standards and quality of life. The challenge of sustaining long-term productivity growth has intensified

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foundations. This "fund-of-funds" is privately managed and is aimed at seed and early-stage biotech companies.

Id.

36 SCIENCE FOUNDATION IRELAND, *History*, http://www.sfi.ie/about/history/ (last visited Nov. 6, 2010).

37 *Id*.

38 SCIENCE FOUNDATION IRELAND, *Vision & Mission Statement,* www.sfi.ie/about (last visited Nov. 6, 2010).

39 *Id*.

40 *See* SCIENCE FOUNDATION IRELAND, www.sfi.ie (last visited Nov. 6, 2010).

against the backdrop of an increasingly knowledge-intensive and interdependent global economy."[41]

Singapore is another world leader in KBE activities. It's Agency for Science, Technology, and Research, A*STAR, established in 2002, is responsible for leading government efforts in this sector. It currently "oversees 14 research institutes and seven consortia & centres located in Biopolis and Fusionopolis and their vicinity, and supports extramural research with the universities, hospital research centres, and other local and international partners."[42] It also has a very clear and well defined set of goals, which includes several commercialization entities and intellectual property portfolio managers that could easily be replicated in Puerto Rico, drawing from our experience in business incubation. A*STAR has also led the way for the industrialization of R&D in Singapore, which comprises enormous capital.[43] Investments in Singapore are targeted towards two (2) specific areas of research: Biomedical Sciences, and Physical Sciences and Engineering.[44] These are individually catered in Biopolis and Fusionopolis, two state-of-the-art government owned facilities.

Another example of organized governmental efforts towards sponsoring KBE activities is the Research Triangle Park in North Carolina. This stateside effort began in 1959 and currently employs "[m]ore than 37,600 people … with combined annual salaries of over $2.7 billion. The average salary in the Park is $56,000 annually, nearly 45 percent larger than the regional and national average."[45]

Puerto Rico does not lack any of the legal powers that North Carolina used in implementing policies towards promoting KBE in the Research Triangle Park. In addition, it has advantageous taxing power that North Carolina lacks and that allows Puerto Rico to provide lower tax rates and additional incentives. Likewise, even though Singapore and Ireland are both sovereign nations, the point must be made that national sovereignty and increased political powers are not

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41 *National Investment Priorities – A Better Quality of Life for All* 14 (2007-2013), http://www.ndp.ie/documents/NDP2007-2013/NDP_Main_Ch01.pdf.

42 AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH, *Overview*, http://www.a-star.edu.sg/AboutASTAR/Overview/tabid/140/Default.aspx (last visited Nov. 6, 2010).

43 AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH, *National Survey of R&D in Singapore* 10 (2008), http://www.a-star.edu.sg/Portals/0/media/RnD_Survey/RnD_2008.pdf:

> In 2008, expenditure on R&D totaled $7,128 million, which was 2.77% of gross domestic product (GDP). Expenditure on R&D manpower was 35% ($2,498 million) of total R&D expenditure, while other operating expenditure accounted for 33% ($2,334 million) and capital expenditure for 32% ($2,296 million).

Id.

44 AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH, *Research Focus,* http://www.a-star.edu.sg/tabid/138/default.aspx (last visited Nov. 6, 2010).

45 Rick L. Weddle et al., *Research Triangle Park: Evolution and Renaissance* 10 (2006), http://www.rtp.org/files/Fact%20Sheets/rtp_history.pdf.

necessary for implementing the aforementioned policies followed by said countries, which have resulted in immediate improvement of the economy and well-being.

III. TAX POLICY

In June 27, 2008, Puerto Rico enacted Act No. 101, which amends the local Internal Revenue Code to allow for full personal income tax exemption to qualifying scientists that receive R0-1 grants from the National Institutes of Health (N.I.H.), or any equivalent competitive grant provided by the National Science Foundation and other similar science-funding entities. This exemption is available for researchers that are residents of Puerto Rico and participate in projects at accredited universities. It covers all amounts from such services up to the maximum salary allowed by the National Institutes of Health, $195,000. All amounts received from other sources are taxed. The Act explains that there are over 325,000 researchers in more than 3,000 universities in the United States that receive grants and that R&D investments in the United States amounts to $284 billion annually. The Puerto Rico Treasury adopted Regulation No. 7685 of April 7, 2009, which requires that, in order to qualify for the exemption provided for by Act No. 101, scientists have competed openly for obtaining their grants in a process that is at least as competitive as the one for N.I.H. R0-1 projects and that said research project is peer reviewed. The Regulation further explains that grants from several U.S. federal agencies such as the National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and the Environmental Protection Agency, qualify for the exemption, and that only principal and co-principal scientists may apply.

My proposal to offer additional tax incentives to scientists draws from the purpose behind this Act and expands it from qualifying research grants within Act No. 101 to all aforementioned qualifying activities promoted under the Trust's Act while removing the cap for the taxable income tax amount.[46] I would also include industrial scientists that are excluded from Act No. 101, since it only benefits researchers at universities. It should be noted that Puerto Rico has pursued economic development through R&D incentives in the past, including the Industrial Incentives Acts of 1998 and 2008.[47] What I now propose entails a major redefinition of our tax incentives policies.

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46 This can be achieved by amending Chapter 853, subchapter A of the Puerto Rico Internal Revenue Code, P.R. LAWS ANN. tit. 13, § 8411 (2007 & Supp. 2010).

47 William Lockwood Benet, *Comment on James Alm, Assessing Puerto Rico's Fiscal Policies, in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH, *supra* note 3, at 387-88:

> Puerto Rico needs a comprehensive policy, which includes cooperation and reform across government, to stabilize and anchor a changing pharmaceutical industry. By 2001, investment promotion was acknowledged as a priority concern in response to the phase-out of section 936. The local response included the amendment of the industrial Incentives

The Economic Development Incentives Act of 2008, Act No. 73 of 2008, provides a number of tax incentives for R&D. Eligible businesses under the Act will receive an income tax rate of 4%, while those that use intellectual property not owned by Puerto Rico residents are subject to an 8% income tax rate. The Act further provides that novel and pioneer activities qualify for an income tax rate of 1% and 0% for pioneer activities that include the use of locally developed intellectual property. Besides minimal income tax rates, the Act also provides for a 50% income tax credit to offset R&D expenses, including operating expenses, clinical trials, toxicological trials, infrastructure, renewable energy, and intellectual property. These credits can be sold or assigned in any way and proceeds from such sale or assignment are tax free. Further changes in tax policy should include incentives directed at the individual and not at the business entity.

At this time, Puerto Rico should continue to build on these efforts and continue to develop a highly sophisticated and productive manufacturing sector by including R&D activities locally, specifically in the areas where the island has the most expertise.[48] Time is of the essence as the current economic conditions are critical and continue to deteriorate. The fast pace of manufacturing plant closure threatens to reduce the biotechnology and pharmaceutical industry presence in the island, further reducing our competitive advantage.[49] In order to develop

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> Act of 1998 to create a new 0-2 percent corporate tax rate for the "core pioneer industries" category, defined as companies using innovative technology not used in Puerto Rico before January 1, 2000. Significant incremental investments by Amgen, Lilly, Abbott, and Merck came about from this new incentive. However, the Treasury, the Puerto Rico Industrial Development Company, public utilities, and the university system have all exhibited an inability to manage the fiscal consequences of the erosion of tax revenue and a pressing need for improved power and water costs and reliability, among other aspects of their relationship with the drug companies. Investment and tax negotiations need to be redirected in order to better understand corporate investor needs, to improve risk management, and to expand the expertise within the academic community on newly emerging issues in the industry, such as oral drug-manufacturing automation and productivity, bioprocess manufacturing, and the implications of the manufacture of smaller batches within the upcoming personalized medicine era.

Id.

48 TORO FERRER ARCHITECTS, PSC., ET AL., ECONOMIC AND URBAN DESIGN SCENARIOS: THE SAN JUAN KNOWLEDGE CORRIDOR PHASE II SUMMARY REPORT 20 (2007) ("Puerto Rico has developed along the last three decades a highly sophisticated and productive manufacturing sector configured by some of the most important forms in pharmaceuticals, electronics, medical devices and biotechnology").

49 Lockwood Benet, *supra* note 47, at 388:

> This is particularly critical given the patent expiration schedule of the Puerto Rico drug portfolio, pharmaceutical companies' product life extension strategies, and the prospect for a limited introduction of new drugs in the near future. With the expansion of U.S. research and development spending on pharmaceuticals from $12 billion in 1995 to $30 billion in 2004, the number of drugs in early-stage testing has increased substantially, but the number in the later stages of clinical trials has remained essentially constant. The changing biopharmaceutical industry environment and technology innovation since 2001 should have alerted economic development and higher education policymakers to the

these strategies, the government should strongly invest in people driven economics that go after scientists and researchers to establish locally in order to promote a world class research park and commercialize on the innovation developed by such a cluster. Instead of focusing on incentives at the corporate and institutional level, incentives should be directed at the individuals capable of developing the activities sought. No other state can offer that option, since residents in all other states are subject to federal personal income tax. The U.S. Internal Revenue Code considers Puerto Rico a foreign jurisdiction; therefore, Puerto Rico residents are only subject to Puerto Rico taxes on income.[50] Puerto Rico has a privileged advantage when it comes to individual taxation. Even though Puerto Rico's Treasury depends heavily on personal income taxation,[51] the kind of activities incentivized would promote an immigration of scientists from abroad that are not currently taxed anyway. Therefore, the net cost for the Puerto Rico Treasury would be minimal or negative. Even ignoring the positive cycle of economic development and cluster-like environment that would be incited by R&D activities, the simple presence of highly-educated and highly-trained, therefore, highly-compensated professionals would result in an immediate increase of government revenues from their spending and consumption.

Many countries actively pursue investment in R&D by offering a wide variety of tax incentives, which include deductions, allowances, credits, accelerated depreciation, grants, direct subsidies and guaranteed and subsidized loans.[52] Litera-

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need to reform higher education financing and strengthen the management, scale, and capabilities of biosciences research teams.

Id. For a detailed list of drug patent expiration and its economic risk for Puerto Rico, see Antonio García Padilla, *Drugs, Patents, Research and Industrial Growth in Puerto Rico*, SAN JUAN STAR, Dec. 20, 2007, at 73.

50 I.R.C. § 7701(a)(9) (2006).

51 James Alm, *Assessing Puerto Rico's Fiscal Policies, in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH, *supra* note 3, at 328:

> Individual income is the most important source of tax revenues to the Puerto Rico government, accounting in 2002 for 39.3 percent of General Fund tax revenues. Individuals in Puerto Rico are not subject to the U.S. federal income tax. However, they are subject to the Puerto Rico individual income tax, whose structure closely resembles that of the U.S. income tax. Individuals in Puerto Rico are taxed on their worldwide, or global, income including capital gains and other types of capital income. They are allowed several types of deductions (for example, for medical expenses, charitable contributions, professional expenses); they may instead elect a standard deduction.

Id.

52 *See Tax and Global Guide to R&D Incentives*, TAXAND, http://www.taxand.com/news/publications/Taxand_Global_Guide_to_R_and_D_Tax_Incentives (last visited Nov. 6, 2010) (Puerto Rico is already one of the most aggressive participants of global R&D incentives). *See also* Commission of the European Communities, *Towards a more effective use of tax incentives in favour of R&D* (2006), http://ec.europa.eu/taxation_customs/resources/documents/workdoc_tax_incentives_en.pdf; Organisation for Economic Co-operation and Development, *Tax Incentives for Research & Development: Trends & Issues* (2002), http://www.oecd.org/dataoecd/12/27/2498389.pdf; OECD & Ministere de

ture also suggests that revising tax structures is a key to promote knowledge-based economy activities. A recent Milken Institute study, for example, finds that lowering corporate income tax rates and increasing the Research & Development tax credit will have large expansionary effects on the U.S. economy.[53]

A report from the Organization for Economic Co-operation and Development (OECD) on tax incentives and global trends explains that:

> Fiscal incentives for R&D usually take one of three forms: *i) tax deferrals*, which are reliefs in the form of a delay in payment of a tax, *e.g.* depreciation allowances; *ii) tax allowances* or extra amounts over current business expenses deducted from gross income to arrive at taxable income; and *iii) tax credits* or amounts deducted from tax liability.[54]

The same OECD report states that:

> It is expected that, in these and other countries, and particularly those with federal systems, the existence of R&D tax incentives at various tiers of government may increase as a reflection of increasing competition among regions to attract knowledge-based investment.[55]

It is essential to discuss the wide range of development and tax incentive capacities made possible by our actual taxing power distribution. Fiscal Autonomy in a federal government structure allows for local government to develop greater incentives and promote a more precisely detailed behavior as required by the greater degree of local political responsibility that comes with it. If used correctly, it would prove to one of the best political assets in a local government's toolset. As such, what I propose is to take advantage of what would become a *tax externality* affecting the jurisdiction of origin of the scientists. It would be other states who lose. Because federalism allows for instantaneous rearrangement or redistribution of the tax base and the factors of production as a direct result of tax rates changes, the central federal government is most commonly responsible

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L'enseignement Superieur et de la Recherche, *R&D Tax Treatment in OECD Countries: Comparisons and Evaluations* (2007), http://www.oecd.org/dataoecd/20/35/39627931.pdf; European Commission, *Expert Group on Impacts of R&D Tax Incentives, Design and Evaluation of Tax Incentives for Business Research and Development: Good practice and future developments* (2009), http://ec.europa.eu/invest-in-research/pdf/download_en/tax_expert_group_final_report_2009.pdf; R&D Credit Coalition, *International R&D Incentives,* http://www.investinamericasfuture.org/PDFs/021306incentives.pdf.

53 *See* ROSS DEVOL & PERRY WONG, JOBS FOR AMERICA: INVESTMENTS AND POLICIES FOR ECONOMIC GROWTH AND COMPETITIVENESS (2010).

54 Organisation for Economic Co-operation and Development, *Tax Incentives for Research & Development: Trends & Issues* 12 (2002), http://www.oecd.org/dataoecd/12/27/2498389.pdf.

55 *Id*. at 18.

for a higher percentage of taxation.[56] However, that is not the case of the legal distribution of powers in our current relationship with the federal government. Therefore, Puerto Rico could take greater advantage of this macro-economic reality of our political relationship with the United States. That is, because of the *vertical* tax power distribution with the federal government, Puerto Rico is in a competitive advantage before *horizontal* competitors: other states.

To show the substantial scale of this fiscal advantage, I have calculated the tax liability of a scientist in different states. To illustrate this, I compare what a scientist earning $300,000 working in New Jersey, California, North Carolina, and Massachusetts would have to pay in both federal and state income taxes based on January, 2010 rates.[57] Assuming the scientist files a *Married-Jointly* tax return and ignoring itemized deductions, she would pay an initial federal income tax of $76,781. But because amounts paid in state taxes are deductible from federal income taxes,[58] the amount of federal income taxes should be calculated based on the individual states. If the scientist lived in New Jersey, she would have to pay a state income tax of 6.37% out of every dollar earned, which amounts to $19,110, and a federal income tax of $70,475 for a total income tax of $89,584 or an effective tax rate of 29.86%. If the scientist lived in California, she would have to pay a state income tax of 9.3% out of every dollar earned, which amounts to $27,900, and federal income tax of $67,574 for a total income tax of $95,474 or an effective tax rate of 31.82%. If the scientist lived in North Carolina, she would have to pay a state income tax of 7.75% out of every dollar earned, which amounts to $23,250, and federal income tax of $69,109 for a total income tax of $92,358 or an effective tax rate of 30.79%. If the scientist lived in Massachusetts, she would have to pay a state income tax of 5.3% out of every dollar earned, which amounts to $15,900, and federal income tax of $71,534, for a total income tax of $87,434 or an effective tax rate of 29.14%. If the scientist lived in Puerto Rico, and her research activities were not covered by Act No. 101, she would pay $90,510 for an effective rate of 30.17%.[59] When compared to Puerto Rico, the scientist would have a lower tax burden in New Jersey and Massachusetts. In fact, *the scientist would pay higher income taxes in Puerto Rico than in any state with an income tax of 6.83% or lower.* In contrast, if covered by Act No. 101 and if Act No.101's income cap was eliminated, and the qualifying activities

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56 Julia Darby et al., *Fiscal Federalism and Fiscal Autonomy: Lessons for The U.K. From Other Industrialized Countries* (2002), *available at* http://strathprints.strath.ac.uk/6921/1/strathprints006921.pdf.

57 IRS Tax Rates Tables, 26 C.F.R. 1, *available at* http://www.irs.gov/pub/irs-drop/rp-09-50.pdf; Federation of Tax Administrators, State Individual Income Tax Rates (Jan. 2010), http://www.taxadmin.org/fta/rate/ind_inc.pdf.

58 Itemized Deductions for Individuals and Corporations, I.R.C. § 164 (2010).

59 Departamento de Hacienda [Department of the Treasury], *Planilla de Contribución Sobre Ingresos de Individuos* [Income Tax Return for Individuals] (2009), http://www.hacienda.gobierno.pr/downloads/pdf/planillas/INST%20CORTA_2009.pdf.

under the related Trust Act were included, as recommended in this article, she would retain the entire $300,000 in earnings.

As demonstrated by the examples above, Puerto Rico's tax incentives policies need to be directed towards the individual because of the immediate considerable impact it would achieve. Even though Puerto Rico could extend its current incentive scheme, based on incentives at an industrial entity level, to promote entities doing R&D to hire more scientists, Puerto Rico would only be replicating the strategy followed by other states and countries.[60]

CONCLUSIONS AND RECOMMENDATIONS

Puerto Rico's economic viability requires swift decisive steps towards promoting KBE activities. Based on the foregoing analysis, I recommend taking advantage of Puerto Rico's primary taxing capacity to provide individual tax incentives to scientists and researchers in the form of full personal income tax exemption. These incentives should apply to all scientists doing research on qualifying activities under the Puerto Rico Science, Technology, and Research Trust Act. Under the Act No. 101 scheme, only scientists working in academia can benefit from the incentives, therefore, my proposal would also cover scientists in an industrial setting. By promoting individual scientists at the start of the value added chain, R&D activities would ensure a continuation of other locally established activities by providing a pipeline of innovation to be processed

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60 The R&D tax incentives model in Belgium includes both corporate and personal tax measures. Differently from what I propose, the personal tax incentive is not a direct benefit to the individual researcher, but to the employing entity. Employers are exempt from paying over to the Treasury some of the withheld taxes that would otherwise be levied on the salaries paid to the researchers. The exemption basically puts more financial resources directly at the entity's control. By keeping tax withholdings at the entity, a company employing researchers can immediately use those funds in whatever way it judges the most economically appropriate to boost efforts around, for example, employing researchers, launching new research programs or investing in new R&D. *See* Deloitte Belgium Tax Quarterly, *R&D Tax Incentives and the Expatriate Tax Regime*, http://www.deloitte.com/assets/Dcom-Belgium/Local%20Assets/Documents/RD%20incentives.pdf. This scheme insists in promoting economic development through organizations rather than individuals, thus not directed towards attracting scientists.

Another interesting model is the one implemented in South Africa, which provides for a tax allowance for deductible expenses. Entities are permitted to deduct over 150% of their expenses in technological and scientific research and development to reduce their overall taxable income. The tax law also allows for an accelerated depreciation of assets used for purposes of scientific and technological R&D. Eligible capital expenditure on R&D assets is deductible over a period of three years. *See* Department of Science & Technology, Republic of South Africa, *Tax Incentives for Research and Development in South Africa*, http://www.dst.gov.za/r-d/Tax%20Incentive%20Brochure%20for%20R-D.pdf. Again, this scheme is also directed towards the entity, not the individual. *See also* Julie M. Donnely, *Life Sciences Center doles out grants*, BOSTON BUS. J., June 25, 2010, http://boston.bizjournals.com/boston/stories/2010/06/21/daily50.html. Massachusetts Life Sciences Act of 2009 provides several kinds of incentives including seed money, yet all incentives are directed to startups or business entities, rather than individual scientists.

and manufactured in Puerto Rico. Puerto Rico has a world-class critical mass of highly trained individuals in the biosciences and engineering that could further develop their skills through technology transfer in R&D and research commercialization. Our new generation of local scientists would greatly benefit from working close with world renowned scientists.

No state can benefit from our advantageous position in terms of personal income taxation, which would assure long-term results for this initiative. Rather than focusing on individuals, others have tried to promote R&D by providing incentives at the corporate or entity levels; but a brain-based society can no longer go after large organizations or investments. By following the example of Ireland, Singapore, and North Carolina, we should develop a clear ambitious government-led plan with defined goals, monetary backing, and clear assessment metrics. Puerto Rico must also concentrate efforts in promoting business incubation and entrepreneurial training as part of an overall ecosystem necessary for high-growth *gazelle* firms, where most jobs are created. These *gazelle* firms would greatly benefit from commercializing cutting-edge intellectual property provided by the scientists.

Swift economic recovery requires that our political leaders focus on creating jobs and well-being. These goals are well within Puerto Rico's capacity and legal powers to achieve. It would be tragic if Puerto Rico failed to use the current political power distribution to its advantage in promoting the overall economic well-being of its people.