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Researchers and Small-Scale Entrepreneurship

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RESEARCHERS AND SMALL-SCALE ENTREPRENEURSHIP

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Entrepreneurship, at the micro scale, is needed to support development not only at the LDC level.[1] For developing communities in the threshold of a knowledge-based system of wealth creation, micro entrepreneurship is as important, although its profiles and roles might vary. Puerto Rico is one of those communities.

In this essay, I describe some of the tax measures adopted by the Commonwealth of Puerto Rico to leverage its capacity to generate valuable knowledge in the life sciences, an area in which the Island has developed very strong manufacturing capabilities. These tax measures rest on the premise that Puerto Rico must see in every competitive investigator a micro entrepreneur; in every competitive laboratory a micro enterprise.

The strategies described herein translate to other contexts. Tax policies can and should be geared to stimulate entrepreneurship at the smaller scales. Especially when

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[1] The current list of Least Developed Countries consists of 48 countries with the lowest socio-economical development in the world. In 1971, the United Nations established this category in order to promote global awareness and attract support for special programs that may permit these countries to evolve to a developing country. Every three years, the Committee for Development Policy of the UN Economic and Social Council (ECOSOC) reevaluate the list of LDCs; if a country achieves certain socio-economic benchmark it may "graduate" or be promoted to the list of developing countries. The United Nations estimates that these countries "comprise more than 880 million people (about 12 per cent of world population), but account for less than 2 percent of world GDP and about 1 percent of global trade in goods." UNITED NATIONS OFFICE OF THE HIGH REPRESENTATIVE FOR THE LEAST DEVELOPED COUNTRIES, ABOUT LEAST DEVELOPMENT COUNTRIES, http://www.unohrlls.org/en/ldc/25/ (last visited November 11, 2011). The three main criteria to evaluate whether a country is a LDC are:

> (1) *Low-income criterion*, based on a three-year average estimate of GNI per capita, based on the World Bank Atlas method (under $905 for inclusion, above $ 1,086 for graduation as applied in the 2009 triennial review).
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> (2) *Human Assets Index (HAI)* based on indicators of: (a) nutrition: percentage of population undernourished; (b) health: mortality rate for children aged five years or under; (c) education: the gross secondary school enrolment ratio; and (d) adult literacy rate.
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> (3) *Economic Vulnerability Index (EVI)* based on indicators of: (a) population size; (b) remoteness; (c) merchandise export concentration; (d) share of agriculture, forestry and fisheries in gross domestic product; (e) share of population living in low elevated coastal zones; (f) instability of exports of goods and services; (g) victims of natural disasters; and (h) instability of agricultural production. *Id.*

countries move from taxing income, to taxing consumption, as Puerto Rico did in 2006,[2] the wealth generated by smaller entrepreneurs will, in every case, eventually contribute to the financing of the state. In this field, one of the main challenges is to gear tax policies creatively, to leverage wealth creation at the grassroots of the community, without crippling, even in the short term, the resources that the state needs to secure an environment conducive to sustained development.[3]

1. **Background.**

Tax incentives played an important role in Puerto Rico's post World War II development strategy.[4] The Island moved to attract much needed capital by exempting from Puerto Rico taxes the income generated by such investments.[5] Since income generated by Puerto Rico residents, be them individuals or corporations, from Puerto Rico sources, is not subject to federal taxation, the exemption granted by Puerto Rico basically freed from all taxes the income generated in the Island. For practical purposes, Puerto Rico became the only American jurisdiction where corporate taxation could be avoided almost in full.

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[2] The Puerto Rican tax system is based primarily on three sources of revenue: income tax, property tax, and recently the sales tax. A 7 percent sales tax was approved in the Tax Fairness Act of 2006, Law 117 of July 4, 2006, P.R. LAWS ANN. tit. 13, §§ 9091-9098 (2007 & Supp. 2010), as amended divides the income received from the tax as follows: 5.5 percent for the central government and 1.5 percent for the municipalities.

[3] *See generally* JEFFREY D. SACHS, COMMON WEALTH: ECONOMICS FOR A CROWDED PLANET (2008).

[4] *See* JAMES L. DIETZ, ECONOMIC HISTORY OF PUERTO RICO: INSTITUTIONAL CHANGE AND CAPITALIST DEVELOPMENT 300-04 (1986).

[5] Generally, U.S. corporations that operate in U.S. possessions have some benefits for taxation purposes. In particular, income earned from operations in U.S. possessions has been exempt from U.S. taxation until it is repatriated, roughly matching the treatment of foreign source income. In 1976, Puerto Rico became the beneficiary of an incentive that greatly expanded the presence of manufacturing subsidiaries of U.S. corporations. Benefits of section 936 of the U.S. Tax Code, 26 U.S.C. § 936 (repealed 1995), can be explained as follow:

> The introduction of section 936 of the Tax Reform Act of 1976 . . . added a tax credit on repatriations that effectively excluded from federal liability all income of U.S. corporations operating in Puerto Rico. The exception has also applied to the financial income received from reinvestment of retained earnings in Puerto Rico. Enacted to help Puerto Rico obtain employment-producing investments from the U.S. mainland, the section 936 provision distinguished Puerto Rico from foreign tax jurisdiction. In pursuit of tax benefits, various industries, epitomized by pharmaceuticals, transferred large portions of their manufacturing operations to Puerto Rico. However the high cost to the U.S. Treasury and the lack of significant job creation led to the repeal of section 936, with a gradual phase-out over the 1995-2005 period. In the future, Puerto Rico will be treated as a foreign jurisdiction for tax purposes. Barry P. Bosworth & Susan M. Collins, *Economic Growth in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH 24 (Susan M. Collins et al. eds., 2006).

These tax policies, coupled with a well-trained work force, a reliable legal system, an ever improving infrastructure, turned Puerto Rico into one of the most vibrant health-related manufacturing centers in the world.[6] Puerto Rico's industrial base evolved rapidly both in size and in complexity; it moved from clothing to petrochemicals, then to pharmaceuticals and medical devices.[7]

But come the 21st Century, manufacturing alone could not secure Puerto Rico's economic future. Competition from the world's emerging economies in Asia and Latin America grew stronger.[8] Many emerging countries are capable of producing drugs with the same level of proficiency and at lower costs.[9] Further, the pipeline for big blockbuster drugs was rapidly drying down without any foreseeable substitutes to the blockbusters with expiring patents.[10]

Thus, in order to maintain its presence in the emerging global health market – something that does not go undebated[11] – Puerto Rico had to reposition itself. Indeed, the Island had to focus not only in manufacturing, but also in the research, design, development and testing of new products.[12] For instance, through clinical trials for emerging medicines, complex cell analysis and clinical diagnostic projects, Puerto Rico can play a role in the making of the next generation of scientific discoveries. In terms of the Island's relationship with the pharmaceutical and devices industries, this means to move into the value line of this industrial sector.

In this article, I explain the tax measures adopted by the Commonwealth of Puerto Rico to enhance and strengthen basic life-sciences-related research in Puerto Rico paying particular attention to the individual scientists. The enhancement and strengthening of basic research through direct support to the investigators themselves was seen as a condition precedent to stronger applied research in the Island.

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[6] *See* BATTELLE/BIO STATE BIOSCIENCE INITIATIVES 2010, STATE REPORT: PUERTO RICO, http://www.bio.org/sites/default/files/battelle2010/PUERTO_RICO_profile.pdf

[7] For a detailed description and analysis of the evolution of the Puerto Rican industrial base, see DIETZ, *supra* n. 4 at 258-329.

[8] Between 1996 and 2005, the nominal value of the Asian and Latin American manufacturing GDP had grown 28.3 percent and 31.3 percent, respectively. DEVELOPMENT DATA GROUP, THE WORLD BANK, 2008 WORLD DEVELOPMENT INDICATORS (2008), available at http://go.worldbank.org/U0FSM7AQ40.

[9] *See, e.g.,* Yue Fei-fei & Yue Ying-ming, *Study of Comparative Advantages of Chinese and Indian Pharmaceutical Industries under Globalization,* 4(4) MGMT. SCI. & ENG. 82 (2010).

[10] Antonio García Padilla, *Drugs, Patents, Research and Industrial Growth in Puerto Rico*, THE SAN JUAN STAR, Dec. 20, 2007, at 73.

[11] *See* Robert Z. Lawrence & Juan Lara, *Trade Performance and Industrial Policy in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH 533 (Susan M. Collins et al. eds., 2006).

[12] *See* García Padilla, *supra* n. 10.

2. **The Commonwealth's industrial base**.

The 21st Century surprised Puerto Rico with an enviable industrial base. Puerto Rico hosted one of the world's most vibrant pharmaceuticals and medical devices manufacturing hubs.[13] It generated over one fourth's of the Commonwealth's GDP.[14] More than 40 companies operating in Puerto Rico created over 26,000 direct jobs and contributed another 50,000 indirect employments.[15]

Three quarters of the 20 top-selling prescription drugs sold in the United States – Lipitor, Viagra, Zoloft, Zocor, Nexium and Propecia, among them -- were manufactured in Puerto Rico.

3. **The industry's future in Puerto Rico.**

While, overall, health was indeed a growing market in the U.S., anticipated to increase from $2.0 trillion in 2005 to $4.6 trillion by 2024,[16] Puerto Rico's interaction with it was limited, almost exclusively, to manufacturing of drugs and devices.[17]

Even with regards to manufacturing, the prognosis regarding the stability of the industry in the Commonwealth was extremely challenging, in light of the aging of the patents for the drugs manufactured in the Island. The situation was the following: The patents for *Zocor*, a cholesterol lowering product, and *Zoloft*, an antidepressant, two blockbuster drugs manufactured in Puerto Rico by Merck and Pfizer, respectively, expired in 2007. Likewise, in 2007, Pfizer's patent for *Norvasc*, a prescription drug for high blood pressure, and Janssen's patent for *Risperdal*, an anti-psychotic product, both expired.

A year later, in 2008, the patent for *Effexor X/R*, Bristol-Meyer-Squibb's anti-blood-clotting compound, was caught in a legal struggle leading the patent to run out in 2011, at the latest. The patent for *Lipitor*, Pfizer's anti-cholesterol blockbuster, the best-selling drug in the United States, and *Zyprexa*, Lilly's product against mental disorders, both were due to expire around 2010-2011.

These drugs were not ordinary products. They made the list of the 20 best-selling drugs in the United States. As previously said, *Lipitor* ranked first on the list, producing $8.4 billion in sales in 2006; *Zocor* ranked second collecting $4.4 billion that same year; *Effexor*, fourteenth in rank, producing $2.6 billion in sales, *Zyprexa* fifteenth, selling $2.5

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[13] *See* James L. Dietz, Commentary, *Trade Performance and Industrial Policy in* THE ECONOMY OF PUERTO RICO: RESTORING GROWTH 552-54 (Susan M. Collins et al. eds., 2006).
[14] *Id.*
[15] BUREAU OF LABOR STATISTICS, U.S. DEPARTMENT OF LABOR, QUARTERLY CENSUS OF EMPLOYMENT AND WAGES (2001).
[16] *See* CENTERS FOR MEDICARE & MEDICAID SERVICES, NATIONAL HEALTH EXPENDITURE PROJECTIONS 2010-2020 (2011).
[17] Robert Z. Lawrence & Juan Lara, *supra* n. 11.

billion, and *Risperdal*, the eighteenth, which sold $2.3 billion in 2006. Because of the immense volume produced, these drugs accounted for a very significant part of the jobs that the pharmaceutical industry generated in Puerto Rico.

Puerto Rico reacted to these developments with several strategies. On one hand, the Commonwealth has tried to attract the manufacturing of the generic products that emerge upon the expiration of the patents. The manufacturers of generics can benefit from the valuable inventory of plants that become available once the production of patented products is reduced. Manufacturers of generics can take full advantage of the opportunity to start production without construction delays and in facilities already licensed by regulators.[18]

On the other hand, Puerto Rico moved to bring new products to the manufacturing platform. Indeed, most of the patents ready to expire protected chemical drugs. In lieu of these chemical products, Puerto Rico sought to attract the manufacturing of a new family of drugs based on large molecule cultures.[19] These biological products require manufacturing processes that far exceed the complexity of their chemical predecessors. For example, approximately 70 percent of the workforce at a bulk biologics facility holds a bachelor's degree or higher, with up to 5 percent holding Ph.D.'s, a proportion far exceeding that of the typical chemical plant.[20]

Precisely because of its complexity, the manufacturing of biological drugs created in the Island a critical mass that took Puerto Rico to the threshold of the next level in the value line of the pharmaceutical and other life sciences industry: the research and development of new products and applications.[21] It seemed imperative to move through

[18] In May 2008, Blu Pharmaceuticals, a generic drug maker, acquired a 145,000 square-foot FDA-approved facility previously owned by Biovail Corporation. The pharmaceutical was able to fully capitalize existing facilities and also retain former Biovail employees. *See* Press Release, Blu Pharmaceuticals, LLC, Blu Pharmaceuticals Completes Acquisition of Biovail Corporation's Dorado, Puerto Rico Manufacturing Facility (January 15, 2010), *available at* http://www.blurx.us/content/20100115_Biovail_Acquisition.pdf.

[19] *See* García Padilla, *supra* n. 10.

[20] As an example, a leading chemical pharmaceutical plant in Puerto Rico employs 5 Ph.D. while a biological plant employs 46.

[21] In Latin America, only a small group of institutions have significant research agendas. To put it in perspective, the Scimago ranking for 2010, which establishes a hierarchy based on the published scientific production of over 2,000 institutions of higher education or research around the world is very useful. According to the index from the first five hundred institutions analyzed only 14, or about 3 percent, are Latin American universities or research centers. Of those 14, 7 are Brazilian. If we extend our analysis to the next 600 in the hierarchy, that is, if we include institutions ranging from position 501 to 1100, the Latin American participation rate ramains unchanged with 15 more journals. *See* SCIMAGO RESEARCH GROUP, SCIMAGO INSTITUTIONS RANKINGS (SIR): WORLD REPORT (2011). *See also* Antonio García Padilla, Retos y estrategias del espacio iberoamericano de educación superior, *in* INNOVACIÓN Y CONOCIMIENTO- IV JORNADAS IBEROAMERICANAS DE ESTUDIOS INTERNACIONALES (2010).

In terms of journals and publications, the issue is not different. Again following the Scimago index, the first 100 journals are all published in the U.S., the UK or Holland, but none in Latin America. The journal edited in Latin America who occupies the highest rank in this hierarchy is the Memorias do Instituto Oswald Cruz, published in Brazil. *See also* SCIMAGO RESEARCH GROUP, SCIMAGO JOURNAL RANKINGS, *available at* http: www.scimagojr.com/ journalrank.php (las vistited November 1, 2011).

such threshold while Puerto Rico still had a strong manufacturing foundation in the life sciences, a critical mass of qualified people, and modern facilities dedicated to the industry.

4. **An effort to pass the threshold**.

In order to move ahead, Puerto Rico has to strengthen basic research in the life sciences with industrial and clinical goals in mind, in order to generate and attract research aimed at new products. Only a strong basic research environment can nurture applied research.[22] It is not by coincidence that the great research and trials centers worldwide are in close proximity to research universities.[23]

Actually, efforts to bring to Puerto Rico early-stage clinical trials – so much needed to narrow health disparities regarding Hispanics[24] – attested to this. Without a strong basic science research culture, it has been very difficult for Puerto Rico to show the capabilities to handle safely the early testing of emerging drugs.

Fortunately, through the first decade of the 21st Century many indicators attested to Puerto Rico's understanding of these challenges and willingness to move ahead with the appropriate responses. Research infrastructure was a good example. In a world with a

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If we look at the extent to which Latin American countries bring knowledge to the global scene through refereed journals the picture is similar: Among the first 100 countries in the world producing refereed publications, Latin America is represented by twelve countries: Brazil occupies the fifteenth position in the world hierarchy, followed by Mexico, Argentina and Chile, among the top 50, and Colombia, Venezuela, Cuba, Puerto Rico, Uruguay, Peru, Costa Rica and Ecuador between places 51 and 100. *See* SCIMAGO RESEARCH GROUP, SCIMAGO COUNTRY RANKINGS, *available at* http: www.scimagojr.com/ countryrank.php (last visited November 1, 2011).

[22] A survey of 200 companies across 15 industries, done under the auspices of the U.S. National Academies, showed that in terms of choosing location for their research and development facilities, two of the four most important factors (quality of the R & D personnel, and university participation) are directly related to the quality of the university research output, and in all cases these factors outranked other inducements such as tax treatments. An earlier study in the United Kingdom detailed and quantified the benefits that accrue to companies that establish research association with universities. In terms of offering increased range of goods and services, opening new markets or increasing market share, improving quality of goods and services, and reducing unit labor costs, the university associated enterprises in all cases doubled, or nearly doubled, the performance of other companies. JERRY THURSBY & MARY THURSBY, GEORGIA INSTITUTE OF TECHNOLOGY & NATIONAL BUREAU OF ECONOMIC RESEARCH, HERE OR THERE?: A SURVEY OF FACTORS IN MULTINATIONAL R & D LOCATION (2006).

[23] *Id.*

[24] *See* Edith Chen, Andrew D. Martin, & Karen A. Matthews, *Understanding Health Disparities: The Role of Race and Socioeconomic Status in Children's Health*, 96 AM. J. OF PUB. HEALTH 702 (2006); Centers for Disease Control, *Health disparities experienced* by *Hispanics--United States*, 53 MORBIDITY AND MORTALITY WKLY. REP. 935 (2004).

deficit of research infrastructure, communities investing in research facilities give themselves significant advantages.[25]

Up to then, Puerto Rico had not invested in facilities to host research. Much of the science research conducted in the Island took place in buildings designed for teaching that somehow had been turned into laboratories. That was the case even at the university level. Significant investment in research-related facilities was in order.

Puerto Rico engaged in an effort to overhaul fully its inventory of research facilities. In terms of the more basic, school-level facilities, the Puerto Rico Science and Technology Trust,[26] together with municipal governments from all political parties, began the renovation of the science labs of all of the Island's high schools. At the high end, the University of Puerto Rico, launched the construction of a major science research complex, generating 135,000 square feet of space to host high end competitive research. Many other projects grew concurrently: A bioprocess plant next to the University of Puerto Rico's engineering campus, a research complex for the University of Puerto Rico cancer center,[27] and many others. An impressive inventory of laboratory space to support research and research-related training began to develop.

But infrastructure was only part of the strategy. Facilities do not undertake research; it is researchers who do. New knowledge and innovation are non-linear, complex processes best achieved when and where creative people come together. Richard Florida, among many others, has documented how talented, creative people attract each other; as well as how the benefits that flow from these creative clusters spill over to society as a whole.[28] Just as capital, people, talented researchers certainly, have become more mobile.[29] Very many jurisdictions seek to attract good researchers. In such a highly competitive environment, it seemed sensible for Puerto Rico to exploit all the resources available in order to succeed in forming, attracting and retaining in the Island a larger group of highly competitive investigators. Tax policies were part of that agenda.

5. **Trends**.

Through the first decade of the 21st Century, a growing number of countries implemented or enhanced tax incentive programs to encourage corporate-sponsored research. In 1996, for instance, 12 OEDC countries offered such tax incentives; by 2004,

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[25] *See* THURSBY, *supra* n. 22.

[26] The Puerto Rico Science and Technology Trust was created in August 18, 2004. See Law 214 of August 18, 2004, P.R. LAWS ANN. tit. 23, § 695-695i (2006).

[27] The University of Puerto Rico Cancer Center was created by Law 230 of August 26, 2006, P.R. LAWS ANN. tit. 24, §§ 3365-3379 (2008 & Supp. 2010).

[28] *See* RICHARD FLORIDA, THE FLIGHT OF THE CREATIVE CLASS: THE NEW GLOBAL COMPETITION FOR TALENT (2007).

[29] *See* ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, THE GLOBAL COMPETITION FOR TALENT MOBILITY OF THE HIGHLY SKILLED (2008), *available at* http://www.oecd.org/dataoecd/55/3/41362303.pdf.

the number had increased to 2004.[30] The programs included tax deferrals, allowances and credits, including reductions in the tax base applied to R&D expenses.

There is evidence about the success of the measures adopted, being the most robust of these studies, those relying on econometric models estimating the price elasticity of research.[31]

At the moment, no particular standard has been accepted for the design and evaluation of tax incentives aimed at supporting research. The varying economic and industrial structures in different countries, the relative capacity for R&D, the historic spending in R&D and the overall fiscal environment, are some of the factors weighed when determining the appropriate approach.

In Puerto Rico, there has not been much debate about the need to raise the levels of research generated by the both the industry and the academia. Even by 2011, the University of Puerto Rico, the leading research institution in the Island, could show a limited portfolio of fully competitive RO-1 grants.[32] Exploring tax incentives in order to provoke change seemed sensible.[33]

When turning to tax policies as a resource to support the strengthening and enhancement of the Island's community of competitive researchers, Puerto Rico knew that its past experience with incentives provided very limited help. As previously mentioned, historically Puerto Rico had dealt with incentives to leverage large-scale corporate sponsored manufacturing. Manufacturing centers are corporate profit generators. Research centers are not necessarily corporate and certainly not profit, but cost centers.

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[30] COMMISSION OF THE EUROPEAN COMMUNITIES, TOWARDS A MORE EFFECTIVE USE OF TAX INCENTIVES IN FAVOUR OF R&D 4 (2006).

[31] Kenneth J. Klassen, Jeffrey A. Pittman, Margaret P. Reed, *A cross-national comparison of R&D expenditure decisions: tax incentives and financial constraints*, 21 CONTEMP. ACCT. RES. 639 (2003); Bronwyn H. Hall, John Michael van Reenen, *How effective are fiscal incentives for R&D? A review of the evidence*, 29 RES. POL'Y 449 (2000); JESUS C. DUMAGAN, OFFICE OF BUSINESS AND INDUSTRIAL ANALYSIS, U.S. DEPARTMENT OF COMMERCE, RE-EXAMINING THE COST-EFFECTIVENESS OF THE RESEARCH AND EXPERIMENTATION TAX CREDIT (1995).

[32] A gross estimate of the total grants awarded in the United States, using data from the National Institutes of Health, reveals that Puerto Rico received $59.3. million or less than one percent of the 22 billion dollars awarded in the U.S. The University of Puerto Rico is the recipient of 96 percent of all grants awarded in Puerto Rico. The top three states with the most research grants awarded by the National Institutes of Health are California ($3.3 billions), Massachusetts ($2.4 billions), and New York ($2.0 billions). Puerto Rico is currently in the 41st position. *See* National Institute of Health, NIH Awards by Location and Organization, http://report.nih.gov/award/organizations.cfm?ot=&fy=2010&state=US&ic=&fm=&orgid=&view=state&sumcol=fun&sumdir=desc (last visited Nov. 10, 2011).

[33] A significant share of the federal funding granted to Puerto Rico to finance research came through programs aimed at strengthening the research capabilities of minority investigators. These funds were not open to the general scientific community. Although capacity-building funds should lead to the formation of independent, fully competitive investigators, in many cases that objective is not met. The tax incentive granted by the Commonwealth of Puerto Rico through Law 101, hereunder described were, in an important way, a call for researchers to secure fully competitive funding leaving behind the set-aside, protected sources.

The experience abroad did not provide much guidance either. The typical R&D incentives offered in other jurisdictions – deferrals, allowances and credits – were focused on corporate, not personal income.

6. **Personal income tax exemptions**.

Since universities are the typical institutions hosting basic scientific research in Puerto Rico as in many developing economies, and since universities are typically exempt from corporate income taxes, corporate tax benefits could not provide much help for leveraging basic research activity in the Island. The scenario created an opportunity to explore untested approaches to the topic.

Puerto Rico knew that this was a rather new arena, demanding new persuasions. The discussion started at the University of Puerto Rico. The University leadership felt strongly about the convenience of exempting from Commonwealth taxation the personal income generated by competitive investigators in research projects. The University proposed that the measure would boost, significantly, the Island's efforts to form, attract and retain high-level investigators. The Government was promptly persuaded, notwithstanding that different political parties controlled the legislative and executive branches.

On June 27, 2008, the initiative became law.[34]

Law 101 amended the Puerto Rico tax code to exempt from personal income taxation the compensation investigators derive from research grants of the level of competitiveness of the RO-1 grants awarded by the National Institutes of Health.[35]

As summarized elsewhere,

> 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 RO-1 grants from the National Institutes of Health (NIH), 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

[34] Law 101 of June 27, 2008, P.R. LAWS ANN. tit. 13, § 8422(b)(59) (2008).
[35] *Id.*

> 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 NIH 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.[36]

In practical terms, the impact of Law 101 over the tax burden of investigators has been estimated in the following terms:

> 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. 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, 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%. 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.[37]

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[36] Carlos R. Baralt Suárez, *Promoting Knowledge-based Economy Activities through Personal Income Tax Incentives*, 80 REV JUR. UPR 583, 596 (2011).

[37] *Id.* at 600 (footnotes omitted).

7. **Perspectives.**

It is too soon to assess the effectiveness of Law 101 in the pursuit of its objectives. Amidst a very tight economic environment, Puerto Rican universities have not had the opportunity to recruit intensively since its adoption. The years ahead will provide a better picture to evaluate the statute appropriately.

But, regardless, Law 101 provides an example of the tax measures that can be explored to incentivize individual entrepreneurship at the lesser scale. Indeed, we know that micro entrepreneurship adds significant value to the national economies, creating or strengthening sources of income, employment and purchasing power.[38] On one end, micro entrepreneurship can "generate a level of sustainable income through small-scale trade, which will be sufficient to bring LDC people out of poverty on an individual, family, or perhaps a community basis."[39]

But the concept should not be limited to small enterprises assisting communities in efforts to quash poverty. At the other end, small-scale entrepreneurship can also bring significant value to the economy. Small enterprises aimed at eradicating poverty and dependencies, can and should interact with small enterprises capable of leading the economy into new stages of production and wealth creation. In both cases, the enterprise is centered in a person or a small group of persons, involved in a creative venture. In both cases, the value generated is based in the individual, more than in the corporate organization surrounding him or her.

Micro enterprises dedicated to the creation of new knowledge, new technologies, new applications for existing technologies, can take developing economies into higher levels of progress. That other type of small-scale entrepreneurship should be recognized and supported as such. In countries historically bound to consume knowledge and technologies generated elsewhere, rather than to generate and export ideas and solutions, such recognition and support are particularly significant.[40]

Both types of enterprises can be leveraged with tax policies duly tailored to their needs and to the role they are called to play in the creation and fair distribution of wealth. Experimentation is in order. The approach undertaken by Puerto Rico through Law 101 is only one of the many alternatives to keep in sight.

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[38] *See* Yong-Shik Lee, *Theoretical Basis and Regulatory Framework for Microtrade: Combining Volunteerism with International Trade towards Poverty Elimination*, 2 L. & DEV. REV. 367 (2009).
[39] *Id.* at 394.
[40] *See* Antonio García Padilla, *Perspectivas y Desafíos: El Vigésimo Aniversario del Simposio Anual de Evaluación del Término de Trabajos del Tribunal Supremo de Puerto Rico*, 79 REV. JUR. UPR 425 (2010).