

Fabella, Raul V.

Working Paper

Incentives Matter: Reflections on the Role of Incentives in Scientific Productivity

PIDS Discussion Paper Series, No. 2013-46

Provided in Cooperation with:

Philippine Institute for Development Studies (PIDS), Philippines

Suggested Citation: Fabella, Raul V. (2013) : Incentives Matter: Reflections on the Role of Incentives in Scientific Productivity, PIDS Discussion Paper Series, No. 2013-46, Philippine Institute for Development Studies (PIDS), Makati City

This Version is available at:

<https://hdl.handle.net/10419/126959>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Incentives Matter: Reflections on the Role of Incentives in Scientific Productivity

Raul V. Fabella

DISCUSSION PAPER SERIES NO. 2013-46

The *PIDS Discussion Paper Series* constitutes studies that are preliminary and subject to further revisions. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements. The studies under the *Series* are unedited and unreviewed.

The views and opinions expressed are those of the author(s) and do not necessarily reflect those of the Institute.

Not for quotation without permission from the author(s) and the Institute.



October 2013

For comments, suggestions or further inquiries please contact:

The Research Information Staff, Philippine Institute for Development Studies

5th Floor, NEDA sa Makati Building, 106 Amorsolo Street, Legaspi Village, Makati City, Philippines

Tel Nos: (63-2) 8942584 and 8935705; Fax No: (63-2) 8939589; E-mail: publications@pids.gov.ph

Or visit our website at <http://www.pids.gov.ph>

**Incentives Matter:
Reflections on the Role of Incentives in Scientific Productivity¹**

Raul V. Fabella
University of the Philippines School of Economics
and
National Academy of Science and Technology

Abstract

Depicting the Philippines as a pre-scientific society, this paper discusses how the environment plays a significant role in shaping the culture of research and scientific productivity. Such conducive environment includes having an adequate think space, a supportive and engaging critical mass, and most importantly, and efficient incentives system.

The paper cites several examples of research institutions in the Philippines which highlighted the importance of collaborative efforts, research networks, strong leadership and generous rewards in attaining success in their endeavor. It also mentions detriments to productivity such as implicit publication costs, the politics of fairness of equality, and the bias for quantity over quality.

Key Words: research culture, research incentives, research institutions

JEL: I23

¹ This paper was prepared for the PIDS-CHED project entitled "Promoting High Quality Research Production in Universities." The usual disclaimer applies.

**Incentives Matter:
Reflections on the Role of Incentives in Scientific Productivity**

by
Raul V. Fabella
University of the Philippines School of Economics
and
National Academy of Science and Technology

I. Introduction

Romancing the Discovery Process

Research is a highly specialized activity. It is done by a rare type of people with the proper temperament and training. The research temperament combines *intense curiosity* with which to spot gaps in the body of the accepted knowledge, a *dogged determination* to find and the stamina to stay in the hunt for solutions to disciplinary puzzles, the *mental discipline* rooted on *logic* and the overriding primacy of facts and, finally, the *humility* to accept that reality many times dances to a different tune. These constitute a daunting combination of traits. Some of these are genetic; some are learned. I liken it to *romance* because, when smitten, a person becomes laser-focused and drops many other concerns.

The gene part of the research temperament is not shared by all. But among those who are endowed, even fewer will manifest the mature research mentality because the immediate environment most times belittles its expression; in other words, the gene will not be expressed because the environment is disdainful. If there is an environment which should enhance its expression, it is the academic environment of colleges and universities. The purpose of this discourse is to identify the factors that enhance scientific productivity, specifically, identify the incentive structure that maximizes the likelihood that people having the research gene will progress to expression and fruition; in other words, optimally conducive environment for research gene expression.

We believe that the distribution of genetic potentials and frailties are a common heritage of humanity. Performance or phenotypic expressions differ because the environments differ. Jose Rizal, for example, argued in *The Indolence of the Filipinos* that the then commonly accepted belief of indolence among Filipinos was not an innate trait as others averred but one rendered expedient in a social environment where hard work and initiative goes unrewarded. The environmental incentives dictate the phenotypes that emerge and replicate. A research environment that is more friendly to the research temperament than another will nurture more people who manifest the gene.

In the end, it is the nature of the surrounding systemic environment that selects which trait will be replicated or extinguished. When we talk 'environments' we are talking 'incentives' or how various traits are rewarded or punished by the system. But incentives come in many different forms and sometimes these combine to produce the desired end.

The Pre-Scientific Society

One respected Filipino scientist/physicist and Magsaysay awardee, Dr. Christopher C. Bernido, observes that the Philippine society is still ‘pre-scientific’. What he meant was that decisions are made, opinions formed and courses of action are taken without recourse to the discipline of logic and scientific evidence. Some other criteria (Francis Bacon’s called them ‘idols of the mind’) dominate. This is a description of present Philippine reality. A much quoted John F. Kennedy quip seems very true of the present Philippine society: *“Many people enjoy the comfort of opinion without the discomfort of thought.”*

My take on the ‘pre-scientific’ emphasizes becoming—rather than being—and, thus, subject to purposive intervention. A ‘pre-scientific’ society, to me, means that relatively few people employ the method of science (the systematic use of data and data analysis) in the social and operational discourse. The more common manifestations of pre-scientific thinking are *fallacies* and *non-sequiturs* such as: (a) the ubiquitous disregard of the distinction between *necessity* and *sufficiency* in social and policy discourse; (b) the ready acceptance of evidence coming from *uncontrolled trials*, and (c) the frequency of elementary fallacies, such as the *fallacy of composition* (“*Ali is a cheat, Ali is a Tiruray, therefore all Tirurays are cheats*”) and the *fallacy of post hoc ergo propter hoc*; (c) the widespread acceptance of argument from authority. While it is the case that these frailties are also extant even in advanced society, they are the dominant features of discourse in a pre-scientific society. Pre-scientific praxis is very costly and may be disastrous to society (as when a viral pandemic is treated as God’s punishment). It is important to recognize our pre-scientific present but more important is the recognition that pre-scientism is an outcome, not a given. That we can escape the tyranny of pre-scientism is an axiom of this enquiry. How the breakout can be engineered is its preoccupation.

Institutions of learning—especially higher learning—are the natural seedbeds of this breakout. Higher research productivity from our colleges and universities and the enjoyment of their technological offshoots will push back the borders of pre-scientism in society. As more and more people subscribe to the tenets of discourse disciplined by logic and evidence, the ethos will ripple to the wider community.

Philippine Scientific Productivity

The most adopted criterion of scientific productivity is publications in peer-reviewed journals listed in the Institute for Scientific Information (ISI) index. While this has drawbacks, it is the least biased criterion given that only the peers within a specialized discipline in the global community can judge the value of a research output.

By this criterion, the ASEAN countries, as a whole, published 165,000 papers between 1991 and 2010 or only 0.5% of the world’s total. This is much lower than the region’s share of 9% of the world’s total population. Among ASEAN countries, Singapore produced 65% of these publications, Thailand 21%, Malaysia 16%, Vietnam 6%, Indonesia 5% and the Philippines 5%. Among the original and larger ASEAN

countries, the Philippines came last. The publication rate increased three times in the second decade of the study (2000-2010) compared to the first (1991-1999) but the Philippines' increase was the lowest. Vietnam showed strength in physics and mathematics; Singapore in nanotechnology and materials science, Thailand did well in food science, Malaysia showed strength in engineering, while the Philippines showed strength in agricultural research. This dismal record echoes the dismal comparative economic development record of the Philippines. How we have fared so badly when time was when Philippine universities were educating the ASEAN's young is an interesting story that has yet to be told.

The Macro-Dimension

It is at least arguable that the leftist movement that captured the academic consciousness from 1960 to 2000 with its denigration and its equation of scientific research to an instrument of global imperialistic domination drove young people from science careers into social activism and politics. Even established scientific leaders like Dr. Roger Posadas went underground in pursuit of the socialist utopia. The spectacle of science workers and intellectuals, being dunce, led in chains and exiled to the farms in Red China made a great impression on the socialist-drifting academic consciousness. Those who wanted a proper scientific career studied abroad and stayed abroad.

Another squeeze play was effected by the trajectory of the Philippine economic structure. The implicit incentive structure rewarded 'redistributive activities' (lawyering and selling) over 'value adding activities' (engineering and technology). The sad fact is that the most successful graduates of engineering schools found themselves in marketing rather than in design and engineering of equipment. There is an interesting observation in development economics called the 'Magee effect': as the proportion of lawyers per thousand population of the country rises, the growth performance of the country falls; as the proportion of engineers and doctors rises, country's economic performance rises! The persistent squeeze put on the Manufacturing sector and other tradeables (Agriculture, Food Processing) from the overvaluation of the currency meant that the Philippines became increasingly mired in 'development progeria': a disease where Manufacturing sector shrank and Service Sector expanded in low income economies. Jobs for well-trained technologists disappeared with the retreat of Manufacturing and sent technical job-seekers abroad. There is an interesting macro-dimension to the retreat of scientific productivity in the Philippines. This enquiry will, however, focus only on the micro-dimension of the low scientific productivity.

The Micro-Dimension

The micro-dimension deals with hurdles to scientific productivity at the level of academic institutions. The productivity of faculty members is the focus. Faculty members are required to contribute to three main activities, viz, teaching, research and extension. This essay is about the productivity of the second. We discuss several dimensions.

1. *Think Space*

For people bitten by the research bug, the most important resource is think space: the time and space when the contemplation of and the search for solutions to scientific puzzles take precedence. Teaching, administrative or committee duties and extension services are important activities but think space is underappreciated. One big difference is that in think space, frenetic activity happens in the mind while the body is leisurely engaged, seemingly idle. It can easily be mistaken for indolence. Einstein indeed observed that great discoveries are residues of 'idle moments': hours, days and months when the mind is thoroughly occupied with the pursuit of different pathways to a solution. In the University of the Philippines System, think space is served by the teaching units off-load (normally three units per semester or three hours of classwork per week) for research. That still leaves a regular faculty with nine hours of class work per week. I understand that regular faculty members teach only one three-unit course per semester in, say, Thailand's Chulalongkorn University. Of course, think space allowances can be frittered away. As we observed, not every faculty member carries the research bug.

Think space allowance should not be a free good and should be accounted for. In U.P. Diliman you are supposed to produce at least one research monograph per year in exchange for the unit offload. This light obligation is many times neglected without adverse consequence. A strong commitment to the withdrawal of the unit off-load should be demonstrated in case of failure to comply with this simple obligation. This commitment signals the premium the administrators give to research. It is also possible for the unit off-load to be extended for specially productive research faculty based on quantifiable criteria. But it should advisedly not exceed nine units per semester. In particular, no faculty member should be allowed any unit overload (with pay) if the obligation is not met.

An especially difficult problem is the obligation to render administrative and committee duties to the college or institute. Faculty members are routinely dragooned to man administrative positions which leave little think space. Certain positions—such as college secretary—must, by rule, be held by a tenured faculty whose think space becomes severely curtailed even though the position also grants teaching unit off-load. In the UPSE, we try very hard to keep non-tenured faculty from burdensome positions but slippage still occurs. There seems to be no magic bullet here. Once more, where possible, administrative positions should be assigned according to opportunity cost: those whose think space/research program will suffer the most should be accorded the greatest latitude from the most demanding positions. This is not easy to implement, since research potential is not observable *ex ante*.

2. *Critical Mass*

The critical mass of researchers in a unit or college is many times viewed as necessary for a brisk research thrust. This is because research is many times viewed as a pursuit of a community whose members enrich and vet each other's work. There have been singular individuals who work tirelessly and alone on a puzzle for years and surprise the world with a dazzling solution at the end of the journey (e.g., Grigori Perelman solved the Poincare conjecture and Andrew Wiles solved the Fermat's Last Theorem as lone wolves; A. Einstein produced his five revolutionary papers in 1904 singlehandedly and

outside the confines of an academic community). But those are exceptions. Most people need encouragement and vetting by colleagues to do good work. It is the regard this community holds its members rather than the ignorant adulation of the outside world that a researcher cherishes.

Many times but not always, the community of researchers work and publish on related areas of research and they form a cohesive research unit recognized as such by the outside world. The U.P. Marine Science Institute (MSI) has attained such a position. Members of the MSI community do research and publish in related areas where cross-fertilization is heavy. They share and develop research pathways and inform each other of emerging research questions, new results uncovered and methods developed elsewhere in the world. The MSI is a template of this pathway.

While a critical mass is desirable, coercion to join a research pursuit is never productive. Rather, the community exerts attractive pull on others because of its undeniable success. A particularly productive professor can attract thesis writers to his area and can transform them into collaborators and colleagues. How the critical mass develops is of great interest. Funding can be important but is never sufficient. In the following we will analyze specific communities that emerged and had become successful. In this essay, we will leave out the U.P. MSI since it is the focus of another paper.

II. Institutions:

Health Issues Community and UPecon Foundation

One of the most productive community of researchers in the social sciences in the country is the Health Issues Research Community, hosted by the U.P. School of Economics in conjunction with the UPecon Foundation (a private non-profit outfit dedicated to financially aid the U.P. School of Economics). UPecon hosts a number of collaborative projects on health issues where funding, network and institutional focus drive productivity.

Health Policy Development Program (HPDP)

HPDP specializes in health policy analysis in aid of policy formulation in the Department of Health, in partnership with the U.P. College of Medicine. It is funded by the USAID. The HPDP brings together UPSE health economists and U.P. College of Medicine professors and MDs to bear on burning health policy issues facing the Department of Health. The funding is sizeable and multi-year so that it encourages continuity and specialized skill acquisition. For the UPSE, this means that the faculty members involved are competitively compensated and, thus, virtually immune from poaching by outside institutions. This poaching is the primary cause of the loss of UPSE faculty. HPDP exposes the involved faculty to current burning issues in the Philippines and the murky world of politics and policy-making. HPDP provides a quick policy response and was not designed to address issues that require in-depth research needing primary data collection. In other words, it is not designed to push the frontiers of knowledge but only to bring to bear extant knowledge on burning policy issues. Its role is to keep together through competitive compensation a critical mass of scholars with interest in health economics that would otherwise have

dispersed to other concerns and locations. This laser focus could not but eventually spill over into frontier research in health economics.

Quality Improvement and Demonstration Study (QIDS)

The Project

The Quality Improvement Demonstration Study or QIDS, which formally started in 2003, is a five-year consortium project led by University of California San Francisco's Institute for Global Health in partnership with the UPecon Foundation at the UP School of Economics and in close collaboration with the Philippine Health Insurance Corporation (PhilHealth) and the Department of Health (DOH). It is funded primarily by the U.S. National Institutes of Health (NIH) and partly by PhilHealth. Its funding is about \$200,000 per year. QIDS is designed primarily to do impact studies of health sector reform initiatives. How and whether health policy changes impact health outcomes on the ground with emphasis on the health and cognitive development of children is QIDS' thrust. It asks, among others: *"How effective are government policies at creating incentives to improve the quality of clinical practice? Do financial and organizational policies actually lead to better health and developmental outcomes?"* It then collects relevant—sometimes longitudinal—data to study these relationships, bringing to bear the latest state of the art econometric and controlled trial tools on the link between policies (increase access to health interventions, bonus payments, etc.) and targets (physical and cognitive health outcomes of children).

The Research Team

The international research team consists of John Peabody from the University of California San Francisco (leader); Orville Solon, PhD, from the UPecon Foundation; Dr. Charles E. McCulloch (Senior Biostatistician); Stella Quimbo, PhD, Program Manager, UPecon; Kimberly Yee, MPH, Program Manager, IGH; Riti Shimkhada, PhD, Consultant, IGH; and Jhiedon Florentino, Research Analyst.

The Research Output

The productivity of the QIDS team speaks for itself. The team has, since 2007, published 16 papers in international refereed journals of the 19 it has so far produced. It has published eight abstracts and either presented or submitted 27 other abstracts.

Why QIDS Succeeded Phenomenally

A good number of factors contributed to QIDS success. We will discuss only the most salient:

i. Research Leadership

QIDS' principal investigation corps consists of Professor John Peabody of UC San Francisco (leader), eminent health economist; Professor Orville Solon of the U.P. School of Economics, recognized health policy expert; and Charles McCulloch, eminent biostatistician. These are academics who view journal publications as the ultimate criterion for scholarly quality.

Apparently, the chief funder—NIH, USA—also share the view of research quality so demonstrated. Thus, the thinking and criteria of the funders matter too.

ii. A Research-Friendly Host Institution

The Health Issues Community of Researchers is hosted by the U.P. School of Economics, which subscribes to publications in refereed journals as paramount. Orville Solon and team members Professors Stella Quimbo and Aleli Kraft are of the U.P. School of Economics, which is known for emphasis on publishing. The University of the Philippines itself made one ISI publication as a tenure requirement. UPSE's tenure requirement is now two ISI publications. This reportedly was an important push factor in the efforts and enthusiasm of the two then Asst. Professors. Thus, the overall attitude of the home institution towards research and publication cannot be gainsaid. These two institutions recognize think space by its units off-loading for research (three units per semester).

iii. Competitive Pay Rates

The host institution, UPecon Foundation, is a private legal personality (in contrast to the U.P. School of Economics, which is not) and a private non-governmental organization (NGO) which can legally contract and engage collaborators at competitive rates un-encumbered by salary standardization and Commission on Audit (COA) rules. UPecon Foundation provided—on several occasions—the bridge financing required to get the QIDS project started and when there were delays in the funding pipeline. We cannot over-emphasize the 'competitive rates' angle. The team members are highly in demand in other areas of policy and research.

Competitive Rates

In 2012, the water regulatory agency, the MWSS, as was its practice, outsourced the complicated analytics of petitions for tariff adjustments for the periodic rate rebasing exercise with private water concessionaires. Previous rate rebasing analytics was supplied partly or wholly by a UPecon Foundation team. But now this team is snugly ensconced in the health issues research. Normally, this MWSS call would have been considered very attractive and lucrative by faculty members concerned but now they cannot be pried out of health research commitment. The dis-attraction of the rate rebasing is its short-term nature and its lack of publications possibilities. Competitive rates are what keep the health issues team focused on the same issues for a long time, partly accounting for its fecundity.

iv. Bent to Publish

The QIDS' inherent bent to publish is shown in two ways:

- Premium given to primary data collection: new primary data has premium attractiveness for journals. Not only is new data collected but the care with which it is collected should be world class. In particular, the data should already provision for controls and/or counter-factuals for every conceivable systematic bias. Thus, the hypotheses should be properly laid

down before the collection instrument is deployed. All the details and protocols used are meticulously documented and made available in QIDS website. This latter angle is mostly neglected in many other research projects with data collection.

- Institutionalization of journal submission routine: (a) Get results quickly written up (pre-write the paper as it were before the results are out), finalize the paper after the results are known, submit to a first journal; (b) if rejected, resubmit to a second (lower rated) without revisions; (c) if further rejected by the second journal, do revisions and re-submit to a third journal etc.

The area of focus (impact of health policies) was also particularly pregnant with researchable issues which coincided with a current flavor-of-the-month research methodology in Economics called Random Controlled Trials (RCT) adopted from Medicine. This method is at the heart of the so-called 'evidence-based policy-making movement' which readily finds favor with journals and aid agencies.

v. Leadership Push

The bent for research results and publication is also personified in the project leadership. Project leader, John Peabody, conducts an almost weekly tele-conference with members where the progress of the project is discussed against its set timetable; problems are presented and remedies suggested. This exerts considerable pressure on the members to deliver. The role of this frequent tele-conference cannot be gainsaid. Dr. Peabody's extensive network in the world of journals is potent weapon.

vi. Collaboration

The success of QIDS is largely due to the strong collaborative effort of four institutions. The partnership between the Institute for Global Health at the University of California San Francisco, the University of the Philippines Economic Foundation, the Philippine Health Insurance Corporation, and the Philippines Department of Health, has allowed for successful implementation and evaluation of our two policy interventions and represents the future of policy-driven research.

Philippine Tuberculosis Initiatives for the Private Sector (PHIL TIPS)

This was another project funded by the USAID via primary contractor Chemonics International, from January 2004 to July 2004 to the tune of Php 12,178,989. The goal was the reduction in the prevalence of tuberculosis thru the application of DOTS program in the private sector. The host organization is also UPecon Foundation. The team consisted of Dr. Joseph Capuno, Dr. Stella Quimbo, Dr. Aleli Kraft and Carlos Tan. This project has produced two published papers in refereed journals. Thus, PHIL TIPS belies the assertion that funder research projects only result in monographs that seldom see publications.

III. Institutions: Network as Catalyst

The Research Center for Theoretical Physics (RCTP)

Not all fecund research communities are pulled along by substantial outside funding. The Research Center for Theoretical Physics (RCTP) community in Physics is an example of a successful unit spurred on by being attached to a global network of researchers. The RCTP community consists of two PhDs in Physics, Dr. Christopher C. Bernido and Dr. Maria Victoria Carpio-Bernido, who run the RCTP located in Jagna, Bohol; physicists in the Visayas, such as San Carlos University in Cebu City; and those in Mindanao, such as the Mindanao State University Iligan Institute of Technology (MSU-IIT). The Bernidos started RCTP in Jagna, Bohol upon leaving the U.P. College of Science and settling in Jagna, Bohol, where they also run a very successful high school, the Central Visayan Institute Foundation. While geographically seemingly in the middle of nowhere, RCTP had one invaluable asset: it is one stop in the network of researchers in Physics originally interested in rewriting physics using Feynman path integral method but has now expanded its interest to Biophysics.

The RCTP conducts an International Physics Conference every three years on a current topic in Theoretical Physics. Participating researchers are given only local expense support. They have to find separate funding for their travel expenses. Two of the participants in the first conference in 1996—Richard t’Hooft and Frank Wilczek—subsequently won Nobel Prizes in Physics. The RCTP and the conferences are run on shoe-string budgets raised from local and foreign donors. The conference papers are then published in a proceedings volume. This has attracted enough world attention that the 2010 conference volume was solicited and published by the prestigious American Physical Society (APS)!

One interesting aspect of the RCTP conferences is the effort to get young faculty and graduate students in the surrounding areas to participate. Physicists and graduate students from the MSU-IIT, San Carlos University and even from Metro Manila (De La Salle University and U.P.) have attended the triennial conferences. This interaction with world-renowned researchers allows young faculty members and graduate students to develop shared research projects and hop on to existing networks. In this process the Bernidos have managed to link the members of their own local network with renowned physicists in their global network. The renowned scholars have spent time teaching and mentoring in local institutes, for example, at MSU-IIT. They have, in turn, facilitated the visits of some local researchers in foreign institutes and universities. It is with these foreign researchers that they identify cutting edge issues and collaborate to solve problems and publish.

There is now a Visayan Consortium of physics researchers where PhD and MS thesis writers are advised by the stars in the consortium. PLDT-Smart Foundation has weighed in to help launch the fledgling consortium. In this case, it is hardly the funding that drives the community, but common research interest. Research leadership is provided by the Bernidos and their global network.

Research networks can substitute for prestigious university degrees and hefty funding in fostering post-PhD productivity. The Bernidos take off periodically to visit other research centers, especially in Europe and Germany, soaking up on new developments and meeting new potential collaborators. The Von

Humboldt Fellowship Program, of which they are fellows, has been very helpful. It is this heavy networking that has sustained productivity.

IV. Institutions: The Role of the Research GURU

The U.P. School of Economics is recognized as a research haven where the faculty members establish their claim on fellow members' attention by research results and publication. The origin of this was its research guru Jose 'Pepe' Encarnacion, who sought to build a community of internationally-published academics in the UPSE. His claim to leadership in this project was impeccable, having himself a substantial and locally unparalleled body of publications in prestigious international journals. As Dean of the UPSE, he egged on and pushed people towards academic research that would have a good chance of publication. He was a walking example of an academic who crash the international journals while sojourned in a third world country, a *rara avis*. The Philippine Center for Economic Development (PCED) maintains a research funding program where faculty members with academic research ideas that cannot otherwise be funded can find support to the tune of 80%-100% of basic pay per year, thus, essentially doubling the pay of the researcher without having to hook up with an outside funder. The only obligation is to produce a paper at the end of the year and give a public seminar. His stature was such that in 1986, after the fall of the Marcos regime when the Philippines was the flavor of the month for aid agencies, the Ford and Rockefeller Foundations—who had helped build the UPSE faculty in the 1970s—offered to fund a program of research award for the UPSE faculty. This was known as the Ford and Rockefeller Foundation Program for Research (FRP).

V. Institutions: Financial Incentives and the UPSE Faculty Research and Retention Program (FRRP)

The UPSE Faculty Research and Recruitment Program (FRRP) started in January 1987 when the Ford and Rockefeller Foundations agreed to fund a three-year program (subsequently extended) designed to retain and recruit faculty to the University of the Philippines, specifically to the UP School of Economics, which had lost valuable faculty human capital to more lucrative outside offers. The grant to the UPSE was \$200,000 (\$120,000 from the Rockefeller Foundation and \$80,000 from the Ford Foundation). The funding was made available at the request by Dean Jose 'Pepe' Encarnacion to the funding institutions. Of the \$200,000, \$100,000 was dedicated to awards for publication in international refereed journals (a list of which was drawn up); \$72,000 was dedicated to financing a research fellowship program, and \$28,000 was for other program costs. The publication award was set at \$5,000 per paper and a regular faculty can win at most five awards (subsequently revised to no more than one award per year in 1993). An UPSE faculty whose research proposal has been approved by the FRP committee received \$150.00 per month for 12 months as an FRP fellow. The FRP envisioned 20 publications through the life of the program. The FRP produced 15 publications through to 1991 or about three published articles per year. Since the record of the previous five years (1981-85) showed one publication per year, this meant a 300% increase in the per-year productivity. The FRP funding was extended to December 31, 1994 when

the publication awards budget was finally exhausted (FRP File, Dean's Office, UP School of Economics, UP).

When the FRP foreign funding ran out, the FRP was continued with local funding (UPecon Foundation) at ₱30,000 per publication and subsequently at \$1,500 per publication. The fellowship program was discontinued. From 1995 to 1999, the FRP awarded eight more publications despite the reduced monetary award. A total of 12 faculty members received publication awards from FRP out of, on the average, 23 faculty members during the period. It is clear that only about half the faculty availed. But before the FRP, only one faculty member, Dean Jose Encarnacion, was publishing. Thus, the number of faculty members involved in research and publication rose tenfold due to the FRP.

Why the FRP succeeded the way it did is of interest. Previous to FRP, UPSE faculty members augmented their income by doing outside projects or consultancies. Few publications—if at all—resulted from these involvements. The FRP awards and fellowship made research and publication, especially the latter, very compelling. The \$5,000 award per publication was in excess of the annual basic U.P. salary of the U.P. junior faculty when it began in the mid-1980s. It helped that then Dean Jose Encarnacion would continually prod members of the faculty to avail of the awards, he being under pressure to deliver the results promised to the funders. It would have been a considerable embarrassment to Dean Encarnacion had the outcomes promised failed to be delivered. He, of course, led by example.

It is my opinion that the FRP fellowship program's *ex ante* segment giving \$150.00 a month, regardless of performance for FRP fellows, did not itself help much in the publication success. It was the *ex-post* portion (the sizeable award for publication) that made the difference. True, it was ancillary to the publications awards which may have induced people to join as fellows. The publication by a faculty member of a paper was what proved electric for the academic community as a whole. Was \$5,000 per publication the right prize? There is reason to believe that less than that would have delivered as much and that the total funding would have produced more, say, 25 publications. The fact that we had eight more published papers in the five years after the prize was reduced to \$1,500 may attest to that. It was the combination of 'the prize' and the friendly environment ('the prestige') that made FRRP a success.

The most important legacy of FRRP is a group of scholars at the UPSE that values research and its validation by the global community of peers. The promotion to the rank of associate professor and tenure (crossing rank from assistant professor) is now two ISI publications (the university requires only one for the purpose). Although the cash award is now smaller, the congratulatory message from the Dean for each publication is now broadcast to the whole faculty. There is also a move in cooperation with the UPSE Alumni Association in the run-up to the 50th anniversary of the UPSE to raise the awards back to \$5,000 per paper.

Subsequently, the U.P. system adopted a research publications award at \$1,000 prize per publication in an ISI-certified journal. This is considered a successful program and a good use of money. It introduced, for the first time, a merit-based segment into the spending on salary to augment the rather weak merit system embodied by the U.P. academic promotions system. A useful aspect of the U.P. awards system is the annual recognition of awardees for the year with a plaque on top of the prize.

VI. Pathologies: Gaming the ISI Test

As observed, the ISI test has become the standard index for scientific productivity. The U.P. International Publications Award (IPA) makes the publication in an ISI-registered journal as the litmus test of a research quality. This is natural as the diversity and complexity of disciplines means that only the community of scholars within a discipline can judge the merit of a piece of research. But even this tack can be gamed. The body of journals included in the ISI registry can be very diverse. Many local and regional journals make it to the ISI list on the basis of administrative features, such as coming out on schedule for a number of years, rather than on quality of publications. These journals typically will lack selectiveness (the fraction of accepted manuscript to submission) since they do not have a queue in the first place. Many of these resort to charging steep publication fees (not to be confused with submission fees which can be a mark of quality). The impact factor has been many times suggested as a way to discriminate among journals in the same discipline. It is now clear that discrimination among journals and a differential in awards should become standard. U.P. is committed to discriminating between 'ISI-registered' and 'ISI-listed' with publications in the former getting a higher prize. In the future, top journals in the discipline based on impact factor will probably get differential treatment. The UPSE has its own select list of quality journals and not just ISI which qualify. On the whole, the practice of making ISI-refereed journals is the best—though imperfect—criterion for awards.

VII. Pathologies: Quantity versus Quality

Every system of rewards—such as the International Publications Award of the U.P. System—must rely on a set of criteria for quality. The U.P. IPA awards publications define quality as publication in International Science Index (ISI) journals. The ISI has two categories: ISI-listed and ISI-certified journals. The two categories represent different scholarly quality. The ISI-listed journals are of inferior quality and publications there should get a smaller reward. Reward systems that treat them as equal (U.P. IPA at the moment does just that) will find its portfolio bloated by publications in the latter. Thus, *quantity* rather than *quality* is celebrated. Furthermore, many journals that make it to the ISI list—mostly local/regional—are often turned into cash cows by the editors and publishers who care less for scholarly quality and more for the publications fee they extract from authors. Authors who stand to be rewarded heftily for the publication readily pay. The publication fee is the first red flag for poor quality. In the case of the U.P. IPA, two simple questions (1) on whether the author(s) paid a publications fee, and (2) how much should be appended and, if yes, the reward should be correspondingly lower (say, only ₹5,000 more than the publications fee). Note that publications fee should not be confused with submissions fee. Publications fee signals conflict of interest on the part of the editors and reviewers. The use of the impact factor could also be used to distinguish between journals (say journals with impact factor 1.0 or better be rewarded more highly. Publications in the *top journal*, if properly pre-identified, should receive the highest award, say, five times the norm.

VIII. Pathologies: The 'Divide-by-N' Disease

Research award programs are one way to break the stranglehold of a very debilitating ethos that dominates the public sphere and has infiltrated even academic communities. This ethos is known by many names such as 'leveling', 'equalizing', etc. The principal thrust is that fairness is best served by equality of reward. Its most glaring manifestation is 'Divide-by-N': that is, whenever the system finds itself with some extra or new financial resource R , the share of everyone in R is (R/N) , where N is the number of employees or workers in the system. It violates Aristotle's (*Nicomachean Ethics*) venerable fairness dictum: "*Treat equals equally and unequals in the proportion of their inequality.*" Divide-by-N is mindless to apply and it does smack of naïve fairness. Where individual effort and initiative matter, the reward system must discriminate and celebrate thoroughbreds. But the salary system in government service (salary standardization) does not recognize merit enough. One, however, should mention the Scientific Career System of DOST which recognizes scientific achievement among government employees be it so slight. This is an example of new modalities which are merit-based and outside of the salary standardization. The latter's result is that the government cannot attract many talented and honest people.

University administration should be aware of 'Divide-by-N' ethos and must resist it. It should set aside enough resources to finance reward systems that celebrate merit and singular performance. If so, they will be targets of slings and arrows of the mediocre and the chattering masses who decry merit recognition of any kind and call label it 'elitism'.

IX. Membership in Honorific Science Societies

It has been observed that membership in many honorific science societies is not allotted in close conformity with the ISI-test for scientific productivity. Since members are supposed to be icons of scientific productivity, and scientific productivity is generally reckoned according to the ISI-test, such non-conformity—whether slight or immense—will always be thrown to the face of these societies. There will be scientific workers who, by scientific productivity alone, deserve to be projected to the youth as exemplars but are not members.

Like any type of institutions with a record of longevity, scientific societies have had to navigate the murky waters of funding politics especially in its infancy, which resulted in compromises and accommodations. An example is the membership of Emperor Napoleon Bonaparte in the French Academy where by scientific standard he should not be. Even the membership of Marie Curie involved a customary personal visit (so distasteful to M. Curie) to the grandees of the French Academy. The important thing is that the French Academy outgrew this past.

The imperative for honorific science societies is to move decisively and resolutely towards outgrowing and jettisoning these past compromises going forward. Scientific productivity in the form of direct and objective ISI-test or equivalents has to increasingly strip weight away from indirect signals like institution building, public intellectual roles, successful program and project leadership. There should be no illusion that this will be painless.

X. Conclusion

Scientific productivity in Philippine institutions of higher learning has many enemies, most notably the aggressive bent to mediocrity manifested by the 'Divide-by-N' rule and attacks on merit-based reward systems. In other words, the politics of fairness as equality has created an environment that militates against scholarly excellence which, by its nature, is elitist. Those institutions that have succeeded in fostering scientific excellence and productivity have invariably been the ones who have defied the leveling wave. In many cases, a new reward system has to be introduced that bypasses and pole-vaults the 'Divide-by-N' existing system. Many of these reward systems are ex-post in nature: the reward comes after a well-defined and measurable achievement is delivered. The successful reward systems are seldom paltry: they constitute a large proportion or even exceed the basic pay of researchers. They operate such that the members of the community of researchers are immune from the allures of competing calls. The efficient rewards are contingent on delivery and are never viewed as entitlements. Many of the scientific communities that succeeded maintain and thrive as nodes in international research networks that provide a pipeline for ideas, nurture and funding to and from the international community of researchers. It is also very important that a respected research guru leads the research endeavors of the community and prod members to excel first as co-authors and then as independent researchers. Some of these communities are replicable. But they have to be induced and worked for. There are difficult political hurdles. The best place to start is for administrators to tweak the incentives towards research effort. Most of this will have to be outside the salary system.

Honorific societies should lead the way in making scientific productivity as measured by global consensus as increasingly the criterion for membership.

We started this essay with an observation on the pre-scientific character of the present Philippine society. We said that pre-scientism is not fate but a result of inimical systemic incentives. Where such incentives are favorable, scientific productivity has spiked. It is a matter of adopting and up-scaling the productivity-enhancing features to escape the pre-scientific prison.

Appendix

Comments on CHED Grants and Awards Programs

1. On CHED REPUBLICA Awards: This is a worthwhile program and follows many successful cash award programs (like UP's). This is an ex-post award program which commends itself. As a supplement to what individual HEI-based awards it is useful; by itself alone it is too small (UP's incentive award for ISI publications starts at Php55-thousand), although better than none. I wonder what the uptake is of the award to date. Is there a limit to the number of awards or a limit to the total of the awards in pesos? If so, how are the winners be chosen if the number exceeds the limit? Likewise, if the paper was published two years ago, how does CHED get acknowledged in the published article as required?
2. CHED Research Chair Award: This is limited to project leaders of CHED-funded projects with HEIs. This seems strange, as the project leader is already (I presume, but I may be wrong) receiving compensation from the project. He/she is being compensated twice for the same thing which may be superfluous, if not anomalous. I wonder which HEI will entertain having a chair that is extinguished the moment the project expires. Finally, this appears like an ex-ante award (the project leader may still have to demonstrate his/her capacity to produce) which does not commend it.
3. Faculty Development Program: the requirement "No masters/doctorate degree in priority field applied for" is anomalous if it denies an applicant who has a masters degree in Chemistry and is applying to pursue a doctorate degree in Chemistry.
4. Best HEI Research Program: Presumably, this is to reward an HEI which has an already very productive research program. The criteria for the award are, however, not quantifiable such as "development impact." *Very productive* should at least include ISI publications and since this award is competitive, the impact factor of the ISI journals and number of citations may be used. Otherwise, CHED is open to accusation of subjectivity. The criterion "*multi-disciplinary*" is too restrictive and would be biased against the hard sciences. Collaboration between applied crystallographers and mathematical crystallographers will not qualify.
5. CHED Support for Paper Presentations in International Conferences: My only question is how the awardees for the year are selected if the pool of applicants is larger than can be funded. Is it raffled off, for example?
6. Journal Accreditation Service and Incentives: The big drawback of this program is that it is ex-ante rather than ex-post. Also, we don't know who accredits the journal locally. If CHED or DOST does the accreditation, there may be conflict of interest as they are the granters. Suggestion: make the program an award rather than a bridge financing. That is: Php1-million to the journal that makes it to ISI/Scopus accreditation. Nothing before that; and so much for the journal that wins accreditation locally. Nothing before that.