Comparative Study of Research Partnership in the United States and United Kingdom

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Abstract*—University-Industry Collaboration (UIC) has become an important element in achieving the purpose both in academic institution and industrial sector. One collaboration that can be forged is collaboration in the world of research .Where through this research, will generate outcomes that build and complete each other's needs. All kinds of collaboration have to be contribute each other. So it is necessary to compare between industry and university research in US and UK. The comparison between two types of studies will show the lame or equilibrium in the collaboration that established in that place. Comparative study was done by digging deeply at some of the fabric University-Industry Collaboration (UIC) that has been obtained from the study of literature. Then presented with a descriptive analytical method. So in the end, it is clear about the comparisons between industry and university research studies in US and UK. And given by the result, it can be used as the knowledge for build Indonesian industrialization.*

Keywords*—comparative study, research partnership, University-Industry Collaboration (UIC).*

I. INTRODUCTION

University and industry collaboration is an important thing at this time because of global industrialization. Including universities should be able to meet the demands of industrialization. But what is happening now is the frequent occurrence of miss-match between educational institutions and industry. So the impact is, the university did not know what the industry needs and industry do not know the needs of the university. There should be good communication fabric to create the conduciveness universities and industry so they can mutually benefit each other. Each side can provide information about what they need.

To overcome the miss-match that took place between the two parties needed the collaboration that aims to bridge the university and industry communication. One of them in terms of research. Research industry and university research thus has the characteristics of each. So that will be submitted by each of these studies to be compared to the results obtained and recommendations for the implementation of university and industry collaboration.

Collaboration between universities as institutions of higher education and industry is important because it can be created through the collaboration of solutions for problems that occur in the field of science and social agendas, economic and political democracy, sustainable development and cultural understanding and integration. University and industry collaboration as a scientific collaboration is defined from the point of view of behavior, task, and social background rear (Sonnenwald, 2006).

Based on these three standpoint, university and industry collaboration is defined as any behavior or action of two or more scientists to answer the problem in the interests of social (Lambert, 2003; Hermans and Castiaux, 2007).

II. THE CONCEPT OF UNIVERSITY-INDUSTRY COLLABORATION

University-Industry Collaboration (UIC) discuss various different disciplines. Disciplines covered include information science, psychology, management science, computer science, sociology, policy studies, social science, philosophy, and each discipline in which cooperation can be developed (Anatan, 2008). With a breadth of disciplines, opportunities for a partnership between the university and industry are open.

Garrick et al. (2004) suggested that the interaction between universities and industry can be classified in four ways:

1.1 Collaborative teaching and learning

1.2 Collaborative research and development

1.3 Collaborative business development
1.4 Collaborative development of society, industry and regional

Collaborative teaching and learning include the role of industry in training activities, internships for students, as a speaker, and scholarship providers. Collaborative research and development can be co-operation in research, taking referrals from industry or university research results, providing the opportunity to conduct research (research contracts. Collaboration can be a business development consulting, training, tender, sponsorship, donations, commercialization of intellectual property, facilities and equipment. collaboration community development, regional industry and includes membership in industry associations and professional, community and regional development, staff exchanges, seminars, business and technology development agreement.

That will be the focus of discussion in this paper is about research collaboration in the United States and United Kingdom.

III. CONDITIONS OF RESEARCH COLLABORATION IN THE UNITED STATES

Based from Hall's research (2004), the central problem with these trends highlighted in his paper is the tension between the two worlds of commercial innovation and scientific research with respect to the twin goals of appropriating and diffusing knowledge. Recent developments in the protection of intellectual property in the United States. Together with the increasing closeness of public and university research to commercialization in several major research areas have heightened this tension, causing concern in the academic community and elsewhere that in the race to ensure that there are incentives to create new forms of information such as databases and software, and new research tools for genomic research, we may have inhibited their diffusion back to the research enterprise for which they are essential tools.

Of course, from an economic theoretical perspective, the policy question and remedy are relatively simple and not new: if society benefits from researchers having access to some forms of information or research output at low cost, and there exists private sector willingness to pay for that information, then subsidies to researchers so that they can acquire the information would be socially beneficial, and at the same time, would leave the incentives to produce the information intact. Because private sector firms would still be charged the "market" price, these subsidies would not have to be as large as they would need to be if the government funded the entire activity.

In the real world, this simple solution confronts a number of difficulties. First, government granting agencies such as the National Science Foundation usually exhibit considerable reluctance to finance the acquisition of easily reproducible software and/or databases at prices above marginal cost. In practice, there seems to be a bias towards funding the creation of new databases rather than simply purchasing them on the open market. This is especially true when some of the inputs to the database where themselves produced under government grants. Second, the transactions costs ofthis kind of solution can be substantial. In the software case, consider the difficulties faced by participant(s) in a small computer science research project with little administrative overhead that might haveto license various pieces of software from a series of organizations inorder to pursue its research agenda.

A final consideration is that imposing administrative and pecuniary costs on researchers who wish to use others' research tools as inputs, evenif reimbursement is theoretically possible, tends to discriminate against new and young scientists without grants and also against "outsiders" withradical ideas who cannot get past a peer review. It is hard to quantify this idea, but there are repeated historical examples which suggest that the unpredictability of the sources of new ideas means that they are best encouraged when the costs of entry into the research or innovation endeavor are kept as low as is practicable.

IV. CONDITION OF RESEARCH COLLABORATION IN THE UNITED KINGDOM

Albert et. al (2010)in their paper studies the effects of research collaborations, a knowledge transmission channel that does not necessarily involve commercialization. As argued by many authors,research collaborations, contract research, consultancy, and conferences are far more important channels of knowledge transfer than patents, licenses and spin-offs. They are,however,

more difficult to measure empirically and even more difficult to compare across institutions and time. Here, we have focused on the effects of research collaborations using homogeneous information on grants awarded by the EPSRC, the by far most important funder of research in engineering sciences in the UK. By comparing individuals who are involved in industry collaboration mediated through these grants with researchers who donot receive funding or do not partner with industry, we are able to identify the effects of collaborationonresearchproductivity.

Our main results for this panel indicate that, on average, researchers benefit from collaborating with industry. Researchers with no industry involvement are shown to publish less than those with a small degree of collaboration. Nevertheless, higher levels ofindustry involvement negatively affect research productivity in terms of number of publications. Still, the publication rate of an academic with an average level of collaborationis higher than that of an academic with no collaborative funding. But for higher levels of collaboration, the predicted number of publications turns out to be lower. There are, therefore, two countervailing effects: thepresenceof industry partners is associated with a higher degree of academic research output but theintensity of industry collaboration decreases academic productivity.

We show that the impact of excessive diversion from academic activity through industry collaboration can be seriously underestimated when an inadequate estimation method is used. As documented in previous research (e.g. Arora et al. 1998, Agrawal and Henderson, 2002), past, present and future publications are correlated. Thus, including lags ofthe dependent variable creates endogeneity and biases the estimates. Further, successful, productive researchers are better placed to attract interest from industry. Industry collaboration and patents can be the consequence, and not just the cause, of high numbersof publications. We therefore use a dynamic panel data estimation method in which the lagged dependent variable and other endogenous variables are instrumented for.

Without controlling for the dynamic effects, both the existence and the intensity of industry collaboration would appear to enhance the number of publications. But as collaboration and past publications are correlated, the positive effects of past publicationswould be wrongly attributed to collaboration. When this dynamic effect of the publications is taken into account, the intensity of collaboration no longer enhances academicproductivity. Still, if one assumes that collaboration is exogenous, its effect is very small and insignificant. This could be caused by a correlation between industry collaboration and other unobserved time variant factors, such as accumulated ability or experience, which also enhance academic productivity. Once we instrument the industry collaboration, the negative effect of the intensity grows stronger and becomes significant.

To estimate the effect of patents it is again crucial to take into account both the dynamic effect of publications and the endogeneity problem. In a standard fixed effects regression, patents would have a positive and significant impact on the number of publications. This result would be consistent with the more recent evidence on patents (e.g.Fabrizio and DiMinin, 2008, and Azoulay et al., 2009). This positive effect disappears in the dynamic panel data models because the patents no longer capture parts of the effect of past publications. If one considers patents exogenous to publications, the number of patents even has a negative and significant impact on the count of publications.This significance is not confirmed once we control for endogeneity. Indeed, it is possible that patents are positively correlated to an unobserved factor, such as consultancy activity, which is also negatively correlated with publications. Correcting for endogeneity,the patents do not predict publication rates, as already found in Agrawal and Henderson (2002) and Goldfarb et al. (2009).

Ourfindings suggest that encouraging universities to collaborate moderately with industry is a beneficial policy. A small degree of industry collaboration not only facilitates the transfer of basic knowledge and accelerates the exploitation of new inventions, but also increases academic productivity. Collaboration, though, promotes applied research and discourages basic research. Collaboration unambiguously increases the publications in the most applied set of journals while it decreases those in the most basic set. Therefore, collaboration might need to be discouraged ifbasic research output is the desired objective. We use a large uniquely created longitudinal dataset containing the academic career of the majority of academic engineers in the UK. We concentrate on the Engineering sector because it has traditionally been associated with applied research and industry collaboration and it contributes substantially to industrial R&D (Cohen et al. 2002). In other less appliedfields, collaboration might generate fewer ideas for further research and thereforetheimpact of industrycollaborationmightbeworse. But, thetimeactually spent collaborating with the industry might also be lower.

Ours can only be afirst step in the research of other channels of knowledge transfer. We expect researchers with a high proportion of collaborative EPSRC grants to also have a high proportion of contract research. But it is not clear whether our results would change if the intensity of industry collaboration was measured as the proportion of contract researchwith respect to total research funding. With more information on different channels of knowledge transfer, we would be better able to make comparisons. Here we have already shown that research collaborationshave more impact on research productivity than patents. Further, it might also be interesting to tackle interactions between different knowledge transfer channels. We know very little on whether collaboration channels complement or substitute each other. Consultancy, for example, might have a positive effect on research if it is complemented by collaboration in research.

V. CONCLUSION

In this paper we discuss about the research partnership in the United States and United Kingdom. We have been descripting about things that happened in each State. When compared, the two countries basically have a respectivelyproblem and resolution. In the United States, researchers have access to some form of information or research results at a low cost. While in England, productive researchers placed to attract interest from industry. So there are economic factors that borne by researchers at United States. While, in the UK with a productive research can be placed in the industry. In America, because private sector firms would still be charged the "market" price, these Subsidies would not have to be as large as they would need to be if the government funded the entire activity. a bias towards funding the creation of new databases rather than simply purchasing them on the open market. A final consideration is that imposing administrative and pecuniary costs on Researchers who wish to use others' research tools as inputs, even if reimbursement is theoretically possible, tends to discriminate against new and young Scientists without grants and also against "outsiders" with radical ideas who cannot get past a peer review.

In the UK in encouraging universities to collaborate with industry are quite favorable. Small degree industry collaboration not only facilitating the transfer of knowledge base and accelerate the exploitation of new discoveries, but also enhance academic productivity. But, the time actually spent working with the industry may also be lower. Collaborative research has more impact on the research productivity rather than patents.

So, the mostcomparative prominent of the two models of research partnership is investigators acceptance mechanisms for collaboration with industry. So, to build Indonesian industrialization, should take merits of each model.

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