

## **Contractual arrangements in academia and their implications for performance**

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It is increasingly being advocated that global wealth today is concentrated less in factories and machinery and that knowledge and skills are increasingly becoming critical to the world economy. The growth of a knowledge-centred economy has affected all industries from biotechnology to financial services and has resulted in the focusing of attention away from primary education towards secondary and tertiary education. In this context a major concern has been the obstacles that higher education faces in terms of funding and access. Most of the debate has centred around the lack of financial resources, regulation, and corruption. Here the documentation has revolved around government financing, how budgets are approved by government officials who have little understanding of the goals and capabilities of universities, the inadequacy of libraries and scientific equipment, the paucity of funds for operation and maintenance, etc. On the access front the commentaries have mentioned the under-preparedness of students for higher education due to poor basic and secondary education; the need to supplement family incomes which detracts from the pursuit of

higher education, the gender biases that restrict women from the educational system or that slot them into courses in the humanities and arts that do not deviate from their traditional roles in society, etc. The politicization of higher education, corruption in faculty hiring and student enrollment, and student political unrest have been also addressed to a certain extent. Much less of the attention has gone to the recruitment and retention of high quality faculty and the incentive structures that reward merit in academia.

To focus on the nature of contracting in higher education we need to spell out its organizational features. In what follows I am going to concentrate on the organizational architecture of higher education institutions and use the framework that describes it to make comments on academic contracts. Standardly economists have addressed the problems of higher education from their perspective of market failure. In this perspective education is seen as having the characteristics of a public good in the sense that it is non-rival in production. Externalities are also pronounced in education because of the spillover benefits to society over and above the private benefits. The case has also been made that education is a merit good as individuals left to themselves will invest too little in it. Finally the dominant market character of universities as service providers is oligopoly with spatially segmented market areas. On all these counts of market failures – public goods, externalities, merit goods, lack of perfect competition – it has been argued that education will be underprovided by markets and for more efficient resource allocation some state intervention is called for. This approach does not necessarily state that higher education should be in the public or private sector. Even if it were provided for in the private sector full costs would never be funded by fees alone and foundation grants or industry

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contracts would be required to finance such institutions. The implications of this have been insufficiently spelt out in the literature on provisioning and financing of higher education.

So in an attempt to address this issue we begin by identifying the first defining characteristic of education as being asymmetric information where the buyer is little informed about what is being bought. In the economics literature asymmetries in information arise due to the nature of the good. There are three types of goods –

(1) Search goods – here the quality of the good is known *ex ante* i.e. in advance of the purchase and since in principle customers know what they are buying they simply search out the lowest price. These are the oranges, flour, and petrol of the text books that are the examples used to develop theories of competition.

(2) Experience or taste goods – these are goods whose quality becomes obvious *ex post*, i.e. after the purchase (e.g. wine and second-hand cars). The price that customers are willing to pay depends on the quality as well as the quantity purchased but the seller knows more about the quality than the buyer.

(3) Credence goods – their quality may never be established even after an outcome is observed (e.g. surgical operations and legal advice). Here due to a serious imbalance of information we have to have faith in the judgment and competence of professionals who provide the service.

Education is an experience good and therefore subject to market failure as a result of this. But more than being an experience good it has one more characteristic that is peculiar to it. Going to University is

different from going to McDonald's in the sense that at McDonald's there is no-one at the door to assess whether you're qualified to eat those burgers. Students don't just passively consume their education – they actively co-produce it. And faculty do not just impart information to students – they challenge their thinking, engage them with ideas, and assess their understanding. The student is thus also a supplier of input that is 'processed' by faculty and other resources at Universities into human capital outputs. The student thus has two faces – as a 'customer' (I use this hesitatingly) he pays a price or a fee for education. As a supplier of input he ought to be paid according to the contribution of his input to the output of the University.<sup>1</sup> This incidentally is what does occur. The student is asked to pay less than the cost of producing his education and the difference between the fee and the cost is made up through grants, donations, and subsidies.

This has implications for the organizational structure of a higher education institution. Costs are above fees but as there is asymmetric information there is the possibility of sellers' opportunism where services of lower cost and quality may be provided than expected. It is very difficult to draw up a contract specifying the expected quality of service delivery in all its dimensions and so higher education institutions are designed as not-for-profit institutions. Of course their revenues can exceed their costs but the surplus cannot be distributed outside the institution. There are no outside owners and in that sense they cannot be taken over in a capital market like a publicly owned firm. The surplus not being allowed to be distributed serves to reduce the incentive that a supplier has to take advantage of a partially informed buyer.

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<sup>1</sup> Rothschild & White (1995) were the first to realize this aspect of higher education. Rothschild, M. and L.J. White - "The Analytics of the Pricing of Higher Education and Other Services in which the Customers are Inputs", *Journal of Political Economy*, 103 (3), June, 573-86.

As some students supply high quality inputs it is in the interests of such institutions to be concerned about the identity of those who will be allowed entry. Higher education institutions are selective (Winston, 1996<sup>2</sup>) because they want to be assured of student quality. This requires both demand creation and supply restraint. The donations of foundations and individuals, government grants and subsidies, are used to reduce the price paid by students which creates excess demand. Institutions then select from this excess demand those students with high input qualities. The quality of education imparted is often a function of the quality of the student body as a group as more able students enable more disciplinary ground to be covered and with more depth. The more well endowed an institution is the more it attracts quality faculty and the easier it is for it to offer expensive and high quality education at relatively low tuition fees. This results in it attracting an excessive number of high quality students who will graduate with higher quality human capital. In this manner inequities amongst institutions will be perpetuated. The competition in this market is positional. The pursuit of quality and excellence in the top Universities that also have more resources means that they will be bothered only about their relative position which is enhanced by their ability to attract quality students and faculty that will enhance their prestige. For most institutions it is their relative position vis-a-vis similarly placed institutions in the hierarchy that matters and the other institutions are not on their site map at all.

To attract high quality faculty top schools adopt a selection process that grants tenure after a long probationary period and a searching evaluation. The case for tenure is often made on the basis of three

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<sup>2</sup> Winston, Gordon C. (1996) - "The Economic Structure of Higher Education: Subsidies, Customer-Inputs, and Hierarchy", Discussion Paper No. 40, Williams Project on the Economics of Higher Education, Williams College.

arguments – (1) An essential part of faculty work involves providing independent evaluations of students as well as of other academics and the credibility of such evaluations depends on the independence of the evaluators. (2) The pay off from research of certain kinds may be long in coming which may be stalled by administrators who have a shorter time horizon. (3) It is hard to get faculty to offer honest judgments about hiring talented faculty members if there is no assurance that their own positions won't be threatened by the competition from new hires. It seems that tenure and security of employment are important in research institutions where decisions about research programmes and education involve high and variable return evaluations and long time horizons and where judgments about other academics involves highly specialized knowledge. Security of employment cannot be essential for those who only teach especially when they impart knowledge on drill courses such as elementary accounting, and a beginner's course. Often security of employment is also advocated as necessary for academic freedom so that professors do not hesitate to speak out on controversial subjects. But this is an overplayed argument for academics are not the only ones challenging authority. Novelists, editors, news commentators, cartoonists, and whistle blowers often espouse unpopular views and yet do not have guaranteed jobs for life so that they do not feel restrained from challenging the administration.

Indeed the major threat to outspoken professors is from within academia itself. Assuring freedom from intellectual conformity coerced within the institution is even more of a concern within an institution than is the protection of freedom from external interference. We all know of departments that devise a pattern of appointments that shuts out significant schools of thought, where liberals want to exclude the Marxists, and vice versa. We also know how 'politically incorrect' individuals pay the price for speaking out in terms of harassment and

heckling. Security of employment does not guarantee academic freedom within a university. At its worst security of employment dulls higher education as it can induce a neglect of scholarly duties. Faculty penalties or dismissal for non-fulfillment of institutional responsibilities such as teaching and research is well near impossible. Security of employment can thus cut the link between performance and employment and cause faculty to forget their obligations to the profession. Many departments have non-functional faculty members and the institutional structure protecting them is security of employment. End of year faculty evaluation reports are a ritual undertaken in the name of accountability but are not seen as a means of identifying faculty who need help to get on to the path of excellence.

We next come to the incentive systems in academics. It is often heard that good teaching is punished and that Universities are actually indifferent or hostile to teaching experience when it comes to promotions. Sometimes the academic grapevine spreads this as the saying that anyone who spends much time preparing for class must be deficient in research. Often comments are also made about pay in academics being low and that this is a barrier to attracting good minds into the higher education institution. One way in which lower pay has been justified is by appealing to the freedom and flexibility that academics have. Work is less onerous as academics can organize their tasks according to their own schedule. Increased freedom comes at a price which is a lower salary. A negative consequence of this increased freedom, however, is that academics can engage in personal business and on outside activities whenever such opportunities arise. This should not lead administrators to making the work environment more rigid in terms of signing in and physical presence requirements but instead there should be strict regulations on outside opportunities for work.

The reason that research seems to be rewarded and not teaching is usually attributed to problems in the measurement of output. In some activities output is hard to measure as for example 'care and concern' in health services. Similarly, research it is claimed is easier to measure than is the service provided when teaching. This is notwithstanding what we all know about research in terms of the relative importance of quality and quantity – of refereed versus non-refereed publications, of journal articles versus articles in books, etc. If the quantity of research can be measured without regard to quality, then so can the quantity of teaching. Yet teaching is not rewarding and does not count for promotions in many places. And academics are prone to play the measurement game when performance measures are demanded of them in terms of higher levels of student throughput and more numerous publications. There are umpteen stories about the sacrifice of academic standards so as to demonstrate improved performance in terms of the measured variables – e.g. higher student throughput is obtained by leniency or the lowering of pass standards and new journals proliferate to provide further outlets for published articles that few will read. Measured performance improves at the expense of the coherence of the academic system.

To understand the nature of incentives in the academic world we can focus on two major functions for which academics are hired - teaching and research. Teaching is the result of two inputs - teaching time/effort and the services from the stock of knowledge or human capital<sup>3</sup>. The more is the stock of human capital we suppose the greater is the insights provided in lectures. Hence, the productivity of the time

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<sup>3</sup> Teaching output is given by  $T = T(t_T, H)$  where  $H$  is human capital and  $t_T$  the time spent on teaching.

spent on teaching will be higher the higher is the stock of human capital<sup>4</sup>.

In turn, the stock of knowledge is the resultant of training received during doctoral studies and research undertaken later. Someone who does not do research will slowly become outdated and the obsolescence of knowledge can be arrested by doing research<sup>5</sup>. Research output itself depends on the time devoted to research and the stock of knowledge<sup>6</sup>.

The levels of attainment of human capital and research are difficult to measure. It is also difficult to observe the time spent doing research. By contrast the time spent on teaching is easier to observe. However, even here the services of human capital embodied in teaching time are difficult to measure objectively. The initial stock of human capital embodied in a new junior faculty might be verifiable from the fact that the person has obtained a Ph.D. degree and from the reputation of the educational institution from which he comes. However, the University faces the problem of finding a way to observe the stock of human capital at a later date that is the result of accumulated research activity. An outcome of efforts undertaken to accumulate human capital is research and a University could observe the number of publications by a faculty member. However, publications is an imperfect indicator of research output due to the randomness of the publishing process. A faculty member must invest in research without knowing if the research field is sufficiently productive and whether it will, given his abilities, produce results that merit publication<sup>7</sup>.

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<sup>4</sup>  $T_{TH} > 0$ .

<sup>5</sup>  $H_{t+1} = (1 - \delta)H_t + R_t$  where  $\delta$  is the rate of obsolescence and  $R$  is research undertaken.

<sup>6</sup>  $R_t = R(t_R, H_t)$  where  $t_R$  is the time/effort spent on research.

<sup>7</sup>  $P = R(t_R, H) + \varepsilon$  where  $P$  is the number of publications and  $\varepsilon$  is a random variable.

If salary is tied to publications, then, randomness in publications implies randomness in incomes received. Given risk averseness the expected marginal utility of research effort reduces and academics will reduce research to equate the marginal cost of leisure time<sup>8</sup> with the expected marginal utility of effort. A reduction in research is bad news for the institution as individuals reduces the stock of human capital and reduced services from this stock affect teaching adversely. Hence, remunerating publications is bad for the University. Rewarding research by number of publications increases the return to human capital accumulation only at the cost of uncertainty to incomes.

An alternative compensation scheme is to reward on the basis of observable dimensions - the time devoted to teaching plus the initial human capital brought into the institution when the new faculty joins. This discourages research, the enhancement of human capital, and the teaching output in the future declines.

A third alternative is to contract with faculty in the following way. In order to be retained a junior academic must meet the standard of a certain minimum number of publications that is reasonably expected given that research can be unlucky in publication because the research field is not productive or the area of specialization is difficult<sup>9</sup>. If the requirement is not met, then, with a severance payment the faculty could be asked to leave. This is an up or out system. Since the standard to be met is one that is reasonably set at a value lower than the expected number of publications any academic who spends the required time and effort will get a certain reward for the minimum level of research activity

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<sup>8</sup>  $t_l + t_T + t_R = \text{constant}$  where  $t_l$  is time spent on leisure.

<sup>9</sup> If  $\varepsilon$  is distributed over  $(\underline{\varepsilon}, \bar{\varepsilon})$  with a variance of  $\sigma^2$ , then, the standard could be set at say  $P = R(t_R, H) - \sigma$ .

specified. This is more so as the alternative he faces for not putting in the minimum effort of research called for is to face the prospect of looking for alternative employment. This prospect is the cost that is traded off with the security of employment that is offered for putting in the minimum effort that enables the attainment of the critical standard of research.

Promotions can be used as a device to reward those who achieve standards in terms of research activity that are higher realizations of research output. In this way more able researchers can reap the returns to human capital and not feel that they have exhausted their career opportunities. The system works only if the gatekeepers perform their functions keeping in mind the requirements of this sort of system. This sadly has not been the case in Indian academia. Pay in Indian academia is more a reward for initial human capital acquired and time spent on teaching and probation and confirmation are not treated seriously as a screening mechanism that spurs the acquisition of human capital. The system fails because academics have failed it by not performing their gatekeeping roles adequately.

Possibly we should recognize that academics is an engagement with values as well as facts and that it is more broadly concerned with personal development and the enhancement of cognitive skills as well as the transformation of people through a social process. In this perspective we could presume that academics are not income maximizers but are driven by more complex goals such as the inherent interest in research or the pleasure of teaching. There will always be academics who seek financial reward but they should not be the consideration when devising rules to run a system that may displace those who got attracted to other aspects of academic life in the first place. Because the monitoring of effort is imperfect in academia academics can never expect to be paid incentive wages that yield high incomes. Consider what

reward structure would be appropriate if effort could be perfectly monitored. In that case we should provide high powered incentives and complete discretion in the work place as employees who are rewarded according to the marginal value of their effort will completely internalize the true value of spending time and effort on outside activities thereby engaging in such activities only if they are desirable also from the organization's point of view. When it is hard to monitor how much effort an employee puts into his job, then, giving high income incentives for performance exposes the employee to unwarranted risk as the performance signal is noisy. Incentives must per force be low powered to reduce employee exposure to risk but low income incentives must then be accompanied by tight constraints on outside activity as lower incomes will make it more attractive for employees to direct their attention to those activities. The combination of a low emphasis on incentive pay and limitations on the ability to undertake outside activities (such as consultancy) describes the academic job situation. There is a compensating differential in terms of the freedom to decide on work schedules and work styles. The idea is to attract those persons who are striving for the non-income dimensions of status and prestige that goes with academic excellence.

To the extent that academic life emphasizes the importance of not only expertise in a field of knowledge but also the importance of values such as respect for truth and other opinions as well as integrity income considerations cannot be dominant. I would close by stating that a scholar belongs to a community which survives because of the cooperative behaviour that is a part of the individual's focus on teaching and research activities. The exchange in a scholarly community is an exchange of gifts which do not have a quid pro quo like in a market exchange. In deed ideas in the world of gift exchanges are free and the property of the scholarly community that recognizes and awards

contributions. The gift of knowledge to the academic community is meant to spur investments by others that are reciprocal. There may be dissent, segmentation, and dispute in intellectual life but the intellectual community thrives on the freedom of ideas that are not priced in a market so that nobody can purchase the truth. When the ideas of the community are taken outside the community as in the case of consultancy they are no longer treated as gifts and the academic can charge a fee. Such considerations need to be kept in mind in discussions on compensation to academic individuals.