

ECONOMIC FORCES AT WORK IN ACADEMIA

When economists think and write about organizations, they typically focus on commercial firms. A relatively small number of economists, however, have recently begun focusing on the organization in which they work, universities. This note reviews some of this literature and draws parallels between the behavior and characteristics of firms and the behavior and characteristics of universities. One will note that most of this literature is based on the experience of US universities, while few studies look at West European universities. As far as I know there are no systematic (English language) studies that use Central and East European universities as subject of study. '

In this note, I will focus on 4 issues: the incentives given by universities to their employees, the internal organization of universities, the competition between universities for students and faculty and the use of reputation by universities.

Universities and Incentives

Like firms, universities have to use incentives to motivate their employees. The incentives in the academic world are almost exclusively of the 'career-concerns'-type. Better work does not lead to immediate pay-rises but rather to increased chances on future pay-rises, promotions, tenure or prizes.

For research, Siow (1991) and Hamermesh et al. (1982) find that more productive faculty (measured by the stock of publication) earn higher salaries. Graves et al. (1982) further find that departments that have a high number of published works per faculty member are departments that pay more to researchers, have more secretaries per researcher and have lower teaching loads. Teaching is generally seen as a less rewarding job, at least in monetary terms. Still, Fairweather (1996) finds no conclusive evidence when reviewing the literature: there exist studies that find positive, negative and neutral relationships between teaching-performance and salary.

Frank (1985) shows further that wage differences in academe are small, much smaller than for example the contribution a professor makes to indirect costs and he sees this as an indication of the importance of 'status', which can explain why people are not rewarded according their marginal products. However, he questions at the same time whether this marginal productivity principle does hold in the private sector. Still, Freeman (1975) finds that, at US universities, inter-field coefficients of variation are far lower in academic than in industry or government pay structures.

In several European countries, salary is not differentiated according to field, thus creating difficulties for those disciplines where there is an imbalance between salaries at universities and salaries outside science. However, the creative use of promotions or pay scales can soften this problem. Bowen (1964) finds, for British universities that science faculty get promoted faster than Arts faculty'. Another element that could make pay differ is the differing chances on outside research contracts.

There are several prizes for research, of which the Nobel Prize is likely the most widely known one. Prizes do also exist for teaching, though the fame attached to these prizes is much smaller and much more local. Other bonuses take the form of royalties paid to inventors or gains from research contracts that can be appropriated by the scientists

as extra wage². Again prize incentives are not restricted to the academic world. Many companies have 'employee of the month' prizes and across firms, you have the 'Manager of the Year' contests organized by newspapers and magazines (for example Business Week has an annual top 25), though the latter have no money connected to it, unlike most research prizes in academe.

Baker et al. (1988) conclude their review of practices in the business world with the observation that there is a dominance of promotion-based incentive systems. The academic world, hence, is not an exception. Indeed, a major prize in academe is being promoted to full professor.

More specific to academia is tenure (though not exclusive, it also exists at consulting firms or in justice)³. Several reasons have been advanced for the existence of tenure ranging from its supportive role for academic freedom to the idea that it is necessary to induce existing faculty to choose competent new professors (see Brown (1997) for a review). Anyway, the advantage for the researcher is the high degree of safety tenure brings, though partially he pays for this security: Ehrenberg et al. (1998) find that smaller tenure probabilities slightly increase the starting wage.

Concerning other monetary wage benefits, Woodburry and Hamermesh (1992) present data that indicate that the increased relative importance of these fringe benefits in the academic sector, which parallels the evolution in the business world.

Next to the monetary rewards, there are the non-monetary fringe benefits. University staff, especially professors, tends to have a lot of freedom: they choose their working hours individually, they almost autonomously choose the contents of their teachings etc. Some universities even allow their faculty to work for their own business. While the amount of freedom is probably a lot higher in academe than in firms, the principle itself is not unknown in business. Tapon and Cadsby (1996) for example describe a pharmaceutical firm that allows its researchers to use up to 20 % of their time on their own curiosity driven projects.

Note also that Argyres and Liebeskind (1998) find indications that some US-universities are coming back on this absolute freedom: while earlier on rules on outside activities were unwritten and unenforced, they now are more and more explicitly written down in individual contracts or university-wide documents.

¹ Surprisingly, Argyres and Liebeskind (1998) write similar things about US universities: "...the pay of faculty in professional schools is invariably higher than of faculty in Colleges of Letters and Science (although pay differentials are often only achieved by imaginative adjustments to uniform pay scales)".

² For example at Stanford, the inventor gets 1/3 of the revenues of his invention. For more examples see Janssens (1996).

³ Tenure provides job security though not absolute safety: financial difficulties of the university or misbehavior of the professor break the tenure-clause.

Besides incentives that make employees perform, economic forces also influence the behavior of the subdivisions of universities, the academic departments. Again, many business-like practices can be observed.

The Internal Competition between University Departments

Universities are far from monolithic entities as they conglomerate different kinds of knowledge. And this has consequences for the university: the Carnegie International Survey of the Academic Profession reveals that *'faculty express strong loyalty to their disciplines and fields of study, but they have significantly less commitment to their own colleges and universities'* (Lewis and Altbach, 1996).

One of the consequences of this is that departments will try to further their own interests rather than think and act in the interest of the university as a whole. As a consequence, there exists competition within the university. A nice example of this is what happened at Indiana University (Marcus, 1999). Between 1990 and 1997, the enrollment of the college of arts and sciences declined by about 40 %. But *'since the university's budget is divided among its various schools, based on the number of credit-hours they teach, the college of arts and sciences has run a deficit of between \$1 million and \$1.5 million dollar in each of the past three years, and has had to borrow to make ends meet.'* So the college reacted: *'the college tried luring incoming students away from the university's popular pre-professional programs with colorful advertisements on campus shuttle buses, in newspapers and on posters.'*

Such internal competition, however, happens also in the business-world: for example, Merck-DuPont Pharmaceutical, a joint venture of Merck and DuPont, competes with Merck, that thus created a benchmark for itself (Tapon and Cadsby, 1996). And at the beginning of the nineties, the business units of IBM were free to compete with each other (Fauli-Oller and Giralt (1995)).

Above we described the internal competition between departments. At the same time, universities have installed certain mechanisms that try to manage the whole institution and thus try to keep this competition into certain limits or to influence the results of this competition in a way the universities as a whole prefer.

The tuition-policy of universities has such internal consequences. In general, universities do not differentiate tuition according to subject although it is clear that costs differ from one subject to another. This means that expensive subjects are made more attractive than they would be otherwise, thus

that some students are lured away from the cheaper departments. At the same time, this destroys the incentives of departments to keep costs down. Many US-universities use price discrimination so they set a high sticker-price and then allow for discounts that are a function of the present wealth. Future wealth, which is subject related, is not taken into account, thus shifting demand towards those subjects with higher returns.

Central offices of universities act yet in other ways like an 'internal capital market'. Such an internal capital market can be used to 'invest' in the most promising research projects and most attractive study-programs (instead of investing in the department where the money originated) but many academic institutions try to remain 'egalitarian' and thus try to redistribute income from the poor departments to the rich (see for example Cohen and Noll (1998) and Ehrenberg et al. (1993)).

This 'internal capital markets'-idea has long been seen as one of the reasons of the existence of firms. Recently, however, this idea has become more and more questioned (Bolton and Scharfstein, 1998) because several studies find that these markets do not work like they should: instead of investing in the departments that are most profitable, they rather subsidize less performant divisions. Lamont (1997) for example shows that after the negative 1986 oil shock, oil companies significantly reduced their nonoil investment compared to the median industry investment.

Competition between Universities

Firms compete on the market for inputs and outputs. Similarly, universities compete for faculty and students.

A) Competition for faculty and staff

Because professors can show their research skills to the world through their publications, it is not surprising to see an important external job market where professors move from one university to another in search of higher salaries and more reputation. Ehrenberg et al. (1991) find that the turn-over of faculty is about 10 % each year, a number that remained fairly equal between 1970 and 1990 and does not differ that much over different types of institutions.

In the US, there is also a market for presidents and other university administrators (in other words, the 'managers' of the university). Siegfried's (1998) list of economists that have had administrative positions shows several persons that held administrative positions at different universities. Cecil Mackay Jr. for example has been president of Michigan State University, Texas Tech university and the University of South Florida. Still, the aver-

age tenure of a university president is quite high: Mixon and McKenzie (1999) find that on average they remain 11.5 years president at the same university, with public universities having a substantially higher average tenure (+5 years) than privates, which is claimed to be a consequence of the difference in managerial incentives.

The above evidence described the situation in the US. In Europe though, the situation is different. The rectors of European universities are almost always in-house professors. Similarly, the market for faculty is largely constrained by national borders. As a consequence, options outside academe become more important, which can be illustrated by the large number of faculty that combine the roles of scientist and politician (see Frey and Eichenberger, 1993).

B) Competition for students

US Universities compete for students, or better, they compete for the good students. Indeed, almost none of them does admit everybody that applies. One way of enlarging its pool of (good) students appears to be increasing R&D expenditures: Siow (1997) shows that more students will come from out-of-state if R&D expenditures are higher. Another is the use of merit-aid: students with high SAT students get more financial aid of the university (Hoxby, 1999).

Not surprisingly, universities also react to the actions of their competitors: Yale started to renovate its campus after Harvard had taken similar actions (Wall Street Journal 14/10/1998). And Harvard decided to increase its scholarship awards after its major competitors had done the same (Wall Street Journal 17/09/1998).

Hoxby (1998) shows that due to the decreased importance of proximity (as a consequence of decreases in the price of being mobile) in the 'where-to-enroll'-choice of students, universities became more quality-homogenous internally while quality-heterogeneity increased between colleges, both evolutions that conform to the predictions of the 'industrial organization' - literature. At the same time, the 'across universities'-variability of tuition and educational subsidies, increased.

C) Collusion among universities

Above we focused on competition between universities. At the same time, universities cooperate. Shafer and Reed (1996) describe several consortia of universities in which institutions work together on administrative and academic issues, ranging from joint programs to joint purchase of on-line journals or telephone services.

Cooperation even might lead to collusion: in the US, the Department of Justice (DOJ) filed a case against a group of universities that organized meetings in order to synchronize financial aid to students that applied simultaneously to several of the groups'

members. The universities claimed that they needed this practice to assure that based was need - rather than merit based. The DOJ, however, saw colluding colleges that tried in unfair ways to raise their revenues and decrease their aid (Salop and White(1991)).

Similarly, in 1990, the UK government decided to let the universities tender for students. Bids, however, turned out to be almost uniform. One of the reasons for this failure is thought to be collusive behavior (Cave et al.,1992): *'At the same time, the Committee of Vice-Chancellors and Principals encouraged an information exchange. Universities were asked to indicate anonymously in advance the size and the level of their bids. Finally, attempts were made at the level of individual cost centers and subject groups to oppose competitive tendering. Many of these relied upon moral suasion, but in some cases the possibility of sanctions were invoked. For example a professional organization responsible for accrediting degrees wrote to university departments indicating that any discounting of the guide price might provoke an examination of the quality of teaching provided, possibly leading to a withdrawal of accreditation.'*

Universities and Reputation

Similarities between universities and business can also be observed in the marketing practices. A typical practice of universities is umbrella branding: they cover all their educational activities under the name of the university instead of using different brand names for the component-disciplines. This is a practice that is also widely used in the business world (Sappington and Wernerfelt (1985)). From a more recent date is the big scale branding of non-educational products. In 1998, universities earned 2.5 billion \$ in licensing fees and some even quarrel about the patent on names: Ohio University and Ohio State University for example battled about who could use the word 'Ohio' (Wall Street Journal, 19/12/97). Especially, universities with strong sports teams are represented in this market.

Reputation is also important when a university tries to enter into new businesses because it can 'halo' some of its reputation on its new department which will give the latter the necessary respectability. Goldin and Katz (1998) view this brand-name advantage as one of the reasons of the increase in scope of US-universities and of the demise of independent professional institutes between 1890 and 1940: *'Certain universities had, as well, the capacity to bestow reputation on new divisions in untried areas, such as business schools, and in areas plagued by claims of quackery, as were medical schools in the wake of the 1910 Flexner report.'*

Conclusions

This paper has given a number of examples that show that in many ways, universities behave like firms. Universities use incentive mechanisms and marketing mechanisms that are widely used by firms, they com-

pete like 'normal' firms on the input and output market and they have to implement special mechanisms to prevent to high a level of competition between its subdivisions. Thus, this paper illustrates that the theories and tools of economics can be fruitfully used to analyze other organizations than just commercial firms.

1. *Argyres N. and Liebeskind J.* Privatizing the Intellectual Commons: Universities and the Commercialization of Biotechnology // Journal of Economic Behavior and Organization, - 1998.- V. 35.- P. 427-54.
2. *Baker G., Jensen M. and Murphy K.* Compensation and Incentives, Practice vs. Theory // Journal of Finance- 1988- V. 18- №2,-P. 593-616.
3. *Bolton P. and Scharfstein D.* Corporate Finance, the Theory of the Firm, and Organizations // Journal of Economic Perspectives,- 1998.- V. 12,-№ 4,- P. 95-114.
4. *Bowen W.* British University Salaries: Subject Differentials', in Bowen W., Economic Aspects of Education, 1964.
5. *Brown W.* University Governance and Academic Tenure: A Property Rights Explanation // Journal of Institutional and Theoretical Economics- 1997.-V. 153.-P. 441-461.
6. *Cave M., DodsMOrlh R. and Thompson D.* Regulatory Reform in Higher Education in the UK: Incentives for Efficiency and Product Quality', Oxford Review of Economic Policy,- 1992- V. 8.-№2.-P. 79-103.
7. *Cohen L. and Noll R.* Universities, Constituencies and the Role of the States, in Noll, R (ed.), Challenges to Research Universities, 1998.
8. *Ehrenberg R., Kasper H. and Rees D.* Faculty Turnover at American Colleges and Universities: Analysis of AAUP Data', Economics of Education Review,- 1991,- V. 10.- №2,-P. 99-110.
9. *Ehrenberg R., Rees D. and Brewer D.* Institutional Responses to Increased Increased Federal Support for Graduate Students // Review of Economics and Statistics.- 1993- V. 75.- № 4- P.671-682.
10. *Ehrenberg R., Pieper P. and Willis R.* 1998, 'Do Economics Departments With Lower Tenure Probabilities Pay Higher Faculty Salaries', Review of Economics and Statistics- P. 503-512.
11. *Fainveather J.* Faculty Work and Public Trust : Restoring the Value of Teaching and Public Service in American Academic Life.-Boston: Allyn and Bacon, 1996.
12. *Fauli-Oller R. and Giralí M.* Competition and Cooperation within a Multidivisional Firm / Journal of Industrial Economics-1996-V. 18.-№ 1.-P. 77-100.
13. *Frank R.* Are Workers Paid Their Marginal Product / American Economic Review- 1985- V. 74-№ 4-P. 549-571.
14. *Freeman R.* Demand for Labor in a Nonprofit Market', in *Hamermesh D.* (ed.), Labor in the Public and Nonprofit Sector-1975-P. 85-133.
15. *Frey B. and Eichenberger R.* American and European Economics and Economists / Journal of Economic Perspectives.— 1993.-V. 7.-№4,-P. 185-193.
16. *Goldin C. and Katz L.* The Shaping of Higher Education: The Formative Years in the United States, 1890 to 1940', NBER WP 6537, 1998.
17. *Graves P., Marchand J. and Thompson R.* Economic Departmental Rankings: Research Incentives, constraints, and Efficiency // American Economic Review- 1982.- V. 72- № 5- P. 1131-1141.
18. *Hamermesh D., Johnson G. and Weisbrod B.* Scholarship, Citations and Salaries: Economic Rewards in Economics // Southern Economic Journal-1982,- V. 49.- № 2.- P. 472-481.
19. *Hoxby C.* How the Changing Market Structure of U.S. Higher Education Explains College Tuition', NBER Working Paper 6323, 1998.
20. *Jonssens M.* Uitvindingen in Dienstverband met Bijzondere Aandacht voor Uitvindingen aan Universiteiten-Bruylant, Brussel, 1996.
21. *Lament O.* Cash Flow and investment: Evidence from Internal Capital Markets // Journal of Finance- 1997- V. 22- № 1- P. 83-109.
22. *Lewis L. and Allbach P.* Faculty versus Administration: a Universal Problem, Higher Education Policy- 1996- V. 9.-№ 3,- P.255-258.
23. *Marcus J.* Liberal Arts Ads Irk Free-Thinkers, The Times Higher Education Supplement (Thes), 19/02/1999.
24. *Mixon F. and McKenzie R.* Managerial Tenure under Private and Government Ownership: The Case of Higher Education // Economics of Education Review- 1999 - V. 18.- P. 51-58.
25. *Salop S. and White L.* Policy Watch: Antitrust Goes to College', Journal of Economic Perspectives-1991.- V. 5.- № 3- P. 193-202.
26. *Sappington D. and Wernerfelt B.* To Brand or Not to Brand? A Theoretical and Empirical Question // Journal of Business,- 1985.- V. 58-№ 3- P. 279-293.
27. *Shaffer B. and Reed W.* Consortia in Higher Education: Leveraging Time, Talents, and Resources', NACUBO Business Officer-July, 1996.
28. *Stegfried J.* Should Economists be Kicked Upstairs // Southern Economic Journal.- 1998.- V. 63.- P. 853-887.
29. *Siow A.* Are First Impressions Important in Academia // Journal of Human Resources- 1991.- V. 26,-№ 2,- P. 236-255.
30. *Siow A.* Some Evidence on the Signalling Role of Research in Academia//Economics Letters- 1997- V. 54- P. 271-276.
31. *Tapon F. and Cadsby C.* The Optimal Organization of Research: Evidence from Eight Case Studies of Pharmaceutical Firms // Journal of Economic Behavior and Organization.- 1996.-V. 31.-P. 381-399.
32. *Woodburry S. and Hamermesh D.* Taxes, Fringe Benefits and Faculty // Review of Economics and Statistics- 1992.- P. 287-296.
33. *Who Owns Ohio? Two Schools Squabble over Bragging Rights // Wall Street Journal- 1997- 19 dec.*
34. *Harvard To Boost Scholarship Awards By 20 % // Wall Street Journal- 1998- 17sept.*
35. *Reading, Writing And Building-Nation's Elite Schools Market Tony Improvements To Lure Students // Wall Street Journal- 1998-14oct.*

Том Купе

ЯК ПРАЦЮЮТЬ ЕКОНОМІЧНІ ФАКТОРИ В АКАДЕМІЧНІЙ ОСВІТІ

При дослідженні організацій та фірм переважна більшість економістів звертається до прикладів великих корпорацій, однак поки що мало вивчають організації, де вони самі працюють, а власне -університети. Автор статті робить огляд літератури з наведеної тематики. Більшість науковців досліджують університети Сполучених Штатів, набагато менше-університети Західної Європи, проте, на думку автора, немає жодної систематичної англомовної публікації стосовно центрально- та східноєвропейських університетів.

У статті автор висвітлює чотири аспекти обраної теми, а саме: стимули, якими університети впливають на своїх працівників; внутрішню організацію університетів; боротьбу між: університетами за студентів та викладачів; використання університетами своєї репутації.