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Funding universities for efficiency and equity: research findings versus petty politics

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The present paper starts by discussing the principles of public funding of universities. The size of the social returns to investment in education gives an indication regarding the most efficient use of resources, while the difference between the private and the social rates relates to issues of equity. The available evidence is contrasted to higher education funding policies in several countries. It is concluded that there is a divide between the research findings regarding efficient and equitable financing, and the actual public funding of universities. The reasons for this divide are discussed in the context of political economy, rent-seeking by several stakeholders and, above all, vote-seeking by politicians.

Keywords: universities; efficiency; equity; policy; politics

> Universities … in continental Europe are a dreadful warning of the consequences of nationalization … State supervision, coupled with penury, gives universities the smell of a failing nationalized industry. *The Economist*, January 22, 2004

1. Introduction

Universities are but one of the many activities that need to be funded. Hospitals, prisons, national defense and roads need to be funded as well. How much will each be funded, and who will pay the bill, is a complex issue not amenable to a mechanical linear (or even non-linear) programming solution. Given the complexity of the issue and the weakness of the dismal science to integrate differential preferences across stakeholders, the keywords governing such decisions today are inertia cum petty politics.

Making funding decisions is much easier in the private sector. Toyota and Lufthansa can use linear programming to generate a solution for the optimal number of cars to produce or flight schedules. But how can a Minister of Finance decide how much to give to the Minister of Education? And how does the latter decide how much to allocate to universities versus kindergarten?

The decisions are much easier in the private sector because Toyota has a well-defined objective – to maximize profits. In theory, the Finance Minister also has a tacit objective – to maximize social welfare. But social welfare is not as easy a concept as company profits (Bevc 2007).

For analytical purposes let us assume that the social welfare function has only two arguments – efficiency and equity. Efficiency could be measured by the size of the country's pie (Y = Gross National Product [GNP]), and equity by its distribution (1 – Gini). The higher

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the GNP and the lower the Gini coefficient, the happier citizens would be. So, in theory again and oversimplifying for the sake of exposition, the Minister of Finance could decide allocations of public funds by solving the following problem: maximize social well-being (*SW*) subject to tax revenue (*T*) constraints.

Defining social well-being as a function of efficiency and equity, the problem reduces to:

$$\text{Max } SW = (Y)^{\alpha} \ (1 - \text{Gini})^{\beta} \qquad \text{subject to public spending} \leq T,$$

where α and β are value weights placed on efficiency and equity, respectively. The model could be expanded to include multiple subactivities, such as roads and universities.

Although use of such a model would be beyond the dreams of a democratic leader, or even a benevolent dictator, casting the problem in the above terms has several virtues. First, the model, or parts of it, can be used to map the effect of different allocations to different activities on the two arguments of the social welfare function – efficiency and equity. (For an attempt to specify and test such model, see Psacharopoulos 1977.) Second, the model separates positive from normative issues. The positive part refers to how a given allocation will affect efficiency and equity. The normative part refers to the values needed to integrate the two arguments. In short, the model imposes rigor and discipline in budgetary allocation decisions, away from rhetoric and minutiae.

2. What we know

2.1. On efficiency

A summary measure of the efficiency of (mostly public) allocations to universities is the rate of return. Out of the many available estimates, Table 1 presents the latest returns to investment in tertiary education in 11 OECD countries. The private rate of return compares what the university graduate earns post-tax, over and above a control group of secondary school graduates, with the private cost of university attendance that, in most countries, is earnings foregone while studying. The social rate of return makes the same comparison

Table 1. Returns to university education – OECD countries (%).

Country	Private	Social
Belgium	21.1	10.6
Denmark	12.5	3.4
Finland	16.4	10.7
Hungary	27.8	14.8
Korea	15.9	7.4
New Zealand	7.2	2.4
Norway	15.8	4.3
Sweden	10.8	3.6
Switzerland	11.3	–0.1
United Kingdom	12.5	6.4
United States	15.1	9.6
Average	21.1	6.6

Source: Based on OECD (2007) – private rates from Table A9.6, males, aged 40, no direct costs but foregone earnings; social rates from Table A9.8, males, aged 40, direct costs and foregone earnings.

from a public point of view; that is, earnings differentials are pre-tax and costs include the full cost of a university place, in addition to foregone earnings.

The data in Table 1 reveal that individuals pursuing tertiary education in OECD countries make an extremely efficient investment decision. Investment opportunities yielding a return of 10%+ are rare. Although social returns are substantially lower than private returns (because of the public subsidization of education), the approximately 7% social return on higher education investment is well above the social discount rate or the opportunity cost of capital prevailing in most countries. Thus, based on the above face evidence, funding universities is a privately and socially efficient investment. In other words, the Minister of Education has a strong card at the bargaining table, challenging the Minster of Health or the Minister of Transport to produce evidence on higher rates of return of investment in hospitals or bridges.

Alas, things might not be as easy as described above. Barring methodological issues on how returns to education are estimated (Psacharopoulos 1994; Psacharopoulos and Patrinos 2004), a major issue that arises is who shall finance universities? Is it the responsibility of the state or the individual? Or, perhaps, a mixture of the two?

2.2. On equity

Table 2 presents the mean earnings advantage of graduates with three levels of education: below upper secondary, upper secondary, and tertiary. Each level of education is associated with higher earnings on average, and this is a universal finding in all countries in the world. The earnings advantage of university graduates is 50% above secondary school graduates. Although, on anthropological observations, some university graduates may end up poor, on population sample statistical grounds, most of the university graduates will be among the highest paid, in any society, for their lifetime. This raises a major equity issue; that is, why those who will benefit so much from higher education finance their investment through the taxes paid by people who will never realize such rewards?

In fact, the size of the difference between private and social rates gives a taste of the degree of public subsidization of education in various countries. As shown in Table 3, Denmark, Norway and Sweden are among the most heavily subsidizing countries, whereas Hungary and the United States are among the least.

There exist several studies on the distributive incidence of public expenditure on higher education. This entails comparing the taxes that families of rich and poor students pay with the education benefits these groups appropriate by attending a subsidized public higher education system. This is called the ‘distributive justice’ of education subsidies, or who really pays and who really benefits from public education expenditure.

Hansen and Weisbrod (1969) were the first to study the issue exploring the income redistribution effects of the financing of public higher education in California. Since eligibility for the higher-subsidy institutions was positively related to family income, and since university attendance increases as family income rises, the result was that the distribution of subsidies actually favored upper-income families. These subsidies were compared with the state and local taxes paid. The results showed that families with children enrolled in public higher education received a positive net transfer (subsidy less taxes paid) and that these net transfers were an increasing share of family income. The regressive nature of public financing of higher education has since been documented in many other countries (Tsakloglou and Antoninis 1999; Vawda 2003).

Another way of looking at the distributive justice of higher education participation is to compare the occupational and/or occupational background of students’ fathers with the general population of the fathers’ age group (Table 4). For example, students with a father

Table 2. Relative earnings of the population with income from employment by level of education – OECD countries (Index).

Country	Below upper secondary	Upper secondary (Index based)	Tertiary
Australia	81	100	131
Austria	71	100	152
Belgium	90	100	134
Canada	78	100	138
Czech Republic	72	100	181
Denmark	82	100	126
Finland	94	100	149
France	86	100	144
Germany	88	100	156
Hungary	73	100	215
Ireland	86	100	164
Italy	79	100	160
Korea	67	100	141
Luxembourg	78	100	145
Netherlands	84	100	148
New Zealand	78	100	132
Norway	84	100	136
Poland	78	100	163
Portugal	57	100	179
Spain	85	100	132
Sweden	87	100	127
Switzerland	76	100	156
Turkey	65	100	141
United Kingdom	69	100	155
United States	67	100	175
Average	78	100	151

Source: Based on OECD (2007, Table A9.1a).

Table 3. Degree of public subsidization of higher education.

Country	Subsidization Index
Denmark	3.7
Norway	3.7
New Zealand	3.0
Sweden	3.0
Korea	2.1
Belgium	2.0
United Kingdom	2.0
Hungary	1.9
USA	1.6
Finland	1.5
Average	2.3

Source: Based on Table 2.
Note: Index is the ratio of private to social returns.

Table 4. Over-representation of university students whose father is a university graduate, 2005.

Country	Index
Germany	2.1
Spain	1.5
France	2.0
Ireland	1.1
Italy	1.8
Netherlands	1.6
Austria	2.6
Portugal	5.4
Finland	1.8

Source: Eurostudent (2005, Figure 15).
Note: Index refers to the ratio of students with a higher education graduate father relative to the population at large. An index value of one represents equality.

who is a higher education graduate (and thus has much higher income than the general population) are over-represented in higher education by a factor of five in Portugal and by a factor of two in Austria, France and Germany (Eurostudent 2005).

3. Public finance

Before attempting to balance the plus efficiency argument and the negative equity argument in the social welfare function, it might be good to recap some elementary propositions from public finance. Private higher education expenditures are efficiency neutral or a zero-sum-game from the public coffers point of view. When individuals pay from their own resources for their education, they do it because they expect to derive a benefit, monetary or other. If all education were privately financed, at least in theory, the supply and demand for each level of education would reach equilibrium at a private rate of return comparable with the interest rate on bank deposits. When the state subsidizes education, or any other activity, it creates a distortion bound to introduce inefficiency and inequity.

Today it is generally agreed that general tax revenue should be allocated to activities where market or information failure results in suboptimal investment in that activity. For example, if the production of university graduates generates externalities that are not captured in the benefits received by individuals, people will stop short of a socially optimal investment. Or, if people are unaware of the benefits or the risks associated with investing in tertiary education, the private solution would deviate from the socially optimal one. A similar arguments applies when there are credit constraints and individuals cannot borrow to finance their education.

A lighthouse is the perfect example of a public good that should be subject to public financing. The reason is that everyone can use its services, but it is impossible to pinpoint and charge specific users for the service. Hence, no private company would invest in a lighthouse. The State has a real niche here.

What do a university and a lighthouse have in common? Not much, really. University is not a public good, although it appears as such even in official many documents (European Commission 2001). Public financing of universities might be appropriate if there were substantial externalities associated with the production of university graduates, over and above externalities produced by other levels of education, roads or hospitals.

4. What we do not know

Alas, macro-empirical economics are not as forthcoming regarding the size of such externalities (Sianesi and van Reenen 2003; Pritchett 2006; Lange 2006). In theory, both secondary and tertiary education should have positive externalities. For example, the university graduate may one day invent a new vaccine that would save millions of lives. Or the literate secondary school graduate would contribute to the productivity of co-workers, serve as informal teacher to the children or be less of a burden to the state for social assistance (Levin 2005).

The social rates of return shown above have been described in the literature as 'narrow' social rates $r_{s\text{-}n}$). The reason is that they based on market-observed earnings and costs. To make an efficient allocation decision, one really needs a 'wide' social rate of return $r_{s\text{-}w}$) that would include the value of externalities. As shown in Figure 1, one can reasonably speculate that the wide social rate of return for higher education would be larger than the narrow rate, and thus the private equilibrium may stop short of producing the socially optimal numbers of university graduates ($U_{s\text{-}w}$). In such a case, indeed, public subsidization of higher education might be justified. But taking externalities into account, so might be the case for secondary education, primary education and preschool as well. At this stage of our empirical knowledge, it is impossible to produce precise, or even approximate, wide social rates of return to investment in education.

The lack of as master table on wide social returns to education cannot stop one forming a judgment as to the hierarchy of such rates. Nobel Laureate Jim Heckman and his colleagues have mastered a wealth of secondary evidence spanning economics, sociology, education and medicine; and they came up with the picture shown in Figure 2, where preschool is associated with the highest returns.

5. Present funding allocation state

Table 5 presents the amount of resources devoted to higher education in OECD countries. This amounts on average to 1.4% of the Gross Domestic Product (GDP), with a range from

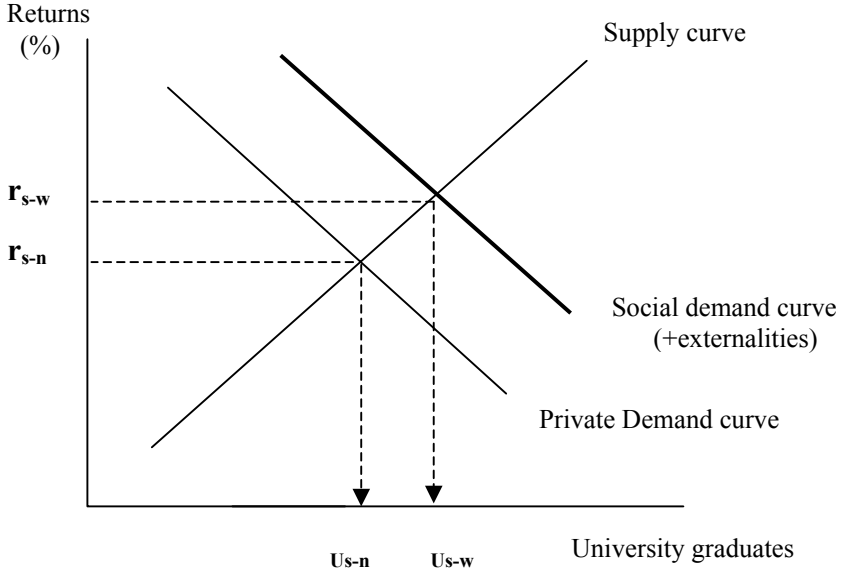

Figure 1. Private and social optimum levels of university graduates.

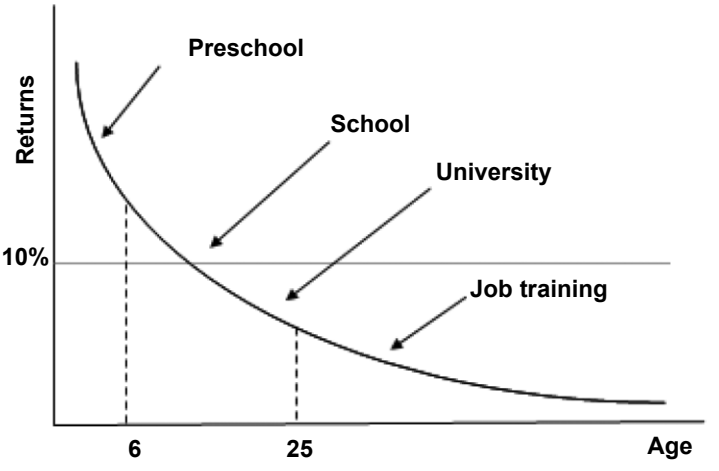

Figure 2. A wide-social rate of return pattern.
Source: Adapted and based on Heckman and Masterov (2005).

0.9% (Italy) to 2.9% (USA). However, a more dramatic difference between countries is in the private share of the GDP devoted to higher education. Chile, Korea, the USA Australia, Israel and New Zealand top the list, whereas continental European countries are at the bottom.

Plotting the total share of higher education funding against the private share helps make the obvious even more striking (Figure 3): the higher the private funding, the more resources are available to universities. The observations fall on two distinct clusters with non-European countries on the top, and European countries at the bottom.

It so happens that the ordering of the private share of university funding coincides with university quality. Out of world's top-20 universities according to the Shanghai ranking, 17 are in the United States and two are in Europe (Table 6). Indeed, universities in the United States have higher endowments relative to European ones. But what matters for university quality is not the legal definition of what is public or private, but the freedom to appoint or fire professors, and the ability to retain the stars rather than having everyone of a flat civil-service payroll. (For an elaboration on the real distinction between public and private universities, see Psacharopoulos 2004b).

6. Why university subsidies prevail?

Table 7 presents a contrast between expenditure per student and tuition fees paid in public universities. The cost recovery is zero in most European countries, while in Korea it exceeds 50%. By contrast, private universities, where they are allowed, impose substantial fees, coming nearer to the resource cost of providing a university place (Table 8).

This raises the legitimate question of why university subsidies persist so much in continental Europe relative to the rest of the world? Certainly it cannot be in the name of externalities, because as we have seen such evidence does not exist. Surely subsidies cannot be based on equity, because we have seen they have the opposite effect (i.e. free university tuition subsidizes the rich). And of course nobody could argue in the name of efficiency, given *The Economist*'s superb analogy of universities to nationalized industries.

The reason for such phenomenon should be sought in the theory of public choice (Buchanan and Tullock 1962). Public funding of universities is the result of aggregating

Table 5. Education expenditure as a percentage of the GDP, 2004.

Country	Public share (%)	Private share (%)	Total share (%)	Private share as % of total
Chile	0.3	1.7	2.0	85
Korea	0.5	1.8	2.3	78
USA	1.0	1.9	2.9	66
Japan	0.5	0.8	1.3	62
Australia	0.8	0.8	1.6	50
Israel	1.1	0.9	1.9	47
New Zealand	0.9	0.6	1.4	43
Italy	0.7	0.3	0.9	33
Mexico	0.9	0.4	1.3	31
United Kingdom	0.8	0.3	1.1	27
Poland	1.1	0.4	1.5	27
Spain	0.9	0.3	1.2	25
Netherlands	1.0	0.3	1.3	23
Slovenia	1.1	0.3	1.4	21
Czech Republic	0.9	0.2	1.1	18
Hungary	0.9	0.2	1.1	18
Slovak Republic	0.9	0.2	1.1	18
France	1.2	0.2	1.3	15
Sweden	1.6	0.2	1.8	11
Portugal	0.9	0.1	1.0	10
Turkey	0.9	0.1	1.0	10
Germany	1.0	0.1	1.1	9
Austria	1.1	0.1	1.2	8
Belgium	1.2	0.1	1.2	8
Iceland	1.1	0.1	1.2	8
Ireland	1.0	0.1	1.2	8
Denmark	1.8	0.1	1.8	6
Finland	1.7	0.1	1.8	6
Average	1.0	0.5	1.4	27.6

Source: Based on OECD (2007, Table B2.4).

agreeing, disagreeing and indifferent voter preferences. 'Free' provision of higher education appeals to the majority of voters. Imposing tuition fees for the sake of efficiency is hard to explain to the average voter. It is even harder to explain why 'free' education is not really free – it is paid through the voters' taxes. And the hardest part is to explain why free education is highly inequitable – same price (zero) for the rich and the poor. Hence, for the sake of not losing votes, politicians succumb to the free education syndrome – that 'free' higher education is not really free and it can have disastrous socio-economic effects (see Psacharopoulos 2003; Psacharopoulos and Papakonstantinou 2005).

7. Conclusion

Private financing of universities is a near zero-sum game from the social point of view, given the fact individuals bear the costs and benefits. So policy discussions should focus on the public finance part.

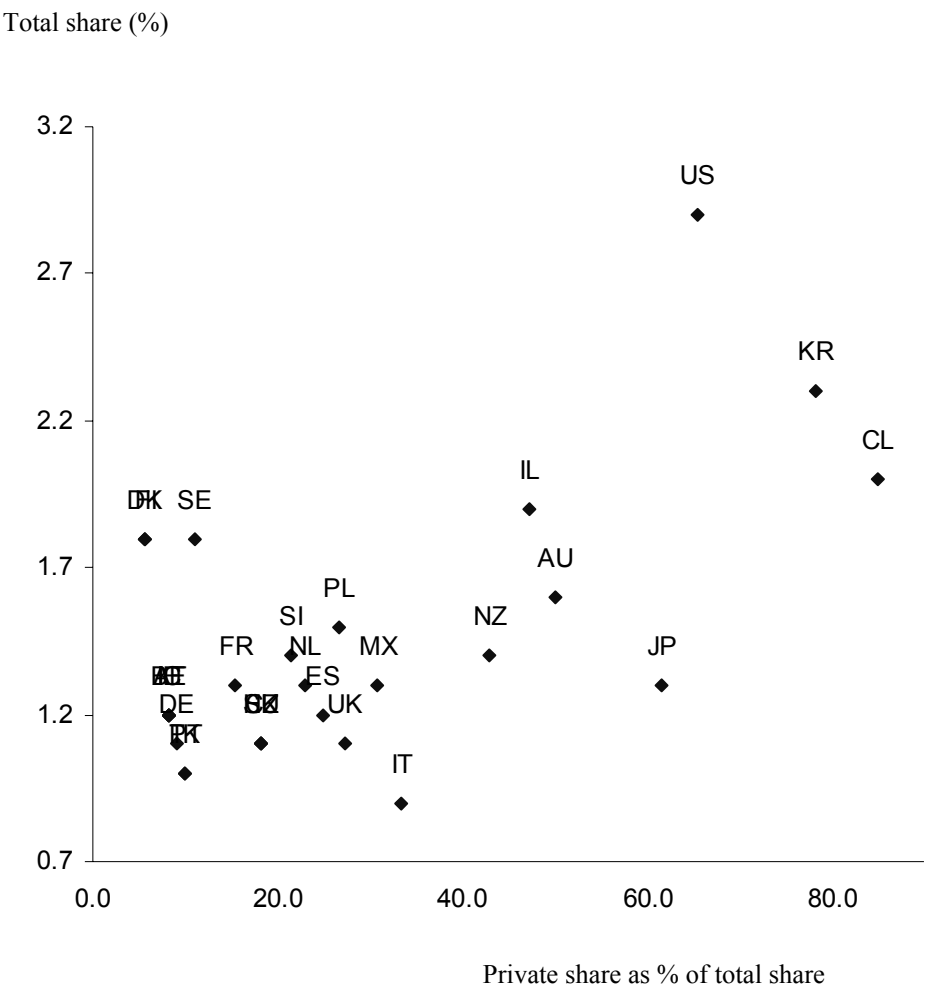

Figure 3. GDP devoted to higher education: total and private shares.
Source: Based on Table 5.

According to the *private* rate of return evidence, obtaining a university degree is a highly profitable investment in all countries in the world. And it is becoming increasing so over time.

According to the *narrow social* rate of return evidence, university education is also a socially profitable investment, although less so than the private one because of the public subsidization of universities.

Regretfully, there is not enough empirical evidence on the *wide social* returns to education that include externalities. But based on theoretical reasoning and whatever scrap of evidence there might exist, the wide social returns to the lower levels of education might be higher than the wide social returns to higher education. (For a debate on this issue, see Birdsall 1996; Psacharopoulos 1996, 2004a).

Regarding equity, all evidence points unequivocally to the regressive effect of present university finance mechanisms in all countries in the world. This means that the poor pay for the education of the rich.

Table 6. The world's top 20 universities.

World rank	University	Country
1	Harvard	USA
2	Cambridge	United Kingdom
3	Stanford	USA
4	California – Berkeley	USA
5	MIT	USA
6	California Institute of Technology	USA
7	Columbia	USA
8	Princeton	USA
8	Chicago	USA
10	Oxford	United Kingdom
11	Yale	USA
12	Cornell	USA
13	California – San Diego	USA
14	California – Los Angeles	USA
15	Pennsylvania	USA
16	Wisconsin – Madison	USA
17	Washington – Seattle	USA
18	California – San Francisco	USA
19	Tokyo	Japan
20	Johns Hopkins	USA

Source: Institute of Higher Education (2006).

Based on the available evidence, present university public finance mechanisms are both inefficient and inequitable. The policy implication is that imposing student fees would promote efficiency and, paradoxically, equity.

It is argued that the theoretical principles and the empirical evidence apply on a global scale, regardless of whether a country falls into a box called advanced industrial country, transition country, or developing country.

The most intriguing question that arises is not whether student fees should be imposed, but why they have not been imposed to a higher extend than in current practice. This points to the political economy of education reforms.

Based on the existing evidence, it is argued that the most efficient and equitable way of financing higher education today is to allocate public funds to the universities in an indirect way, as shown in Figure 4. This is to let the students decide what university will get funds, and what other university may close because of lack of funds. The strong incentives introduced by such a system would ensure efficiency and accountability among students and professors, without resorting to petty regulations. And when more money is put in the hands of the poorer students, equity would be redressed. Over two centuries ago, Adam Smith (1776) proposed a variant of this scheme to make Oxford dons more responsible in their teaching. But today, regardless of its merits, the system invokes the keyword 'voucher' that is an anathema among politicians.

Europe is too far away from adopting such a drastic solution. Whereas there is an ECOFIN imposing fiscal disciple, there is no equivalent – which might be called EDUFIN – for education. According to the Treaty of Rome, the European Commission has no say on domestic education policies. It cannot impose the denationalization of universities.

Table 7. Annual average tuition fees in public universities and expenditure per student, 2004 (in $PPP).

Country	Tuition fees	Expenditure per student	Cost recovery (%)
Czech Republic	0	6752	0.0
Denmark	0	15,225	0.0
Finland	0	12,508	0.0
Iceland	0	8881	0.0
Ireland	0	10,211	0.0
Norway	0	14,997	0.0
Poland	0	4412	0.0
Sweden	0	16,218	0.0
Greece	0	5593	0.0
France	325	10,668	3.0
Spain	785	9378	8.4
Austria	837	13,959	6.0
Belgium (Fr)	861	11,842	7.3
Italy	1017	7723	13.2
New Zealand	1764	8866	19.9
Australia	3855	14,036	27.5
Korea	3883	7068	54.9
Japan	3920	12,193	32.1

Source: Based on OECD (2007, Tables B5.1a and B1.1a).

Table 8. Average tuition fees in independent private universities, 2004/05 ($PPP).

Country	Tuition fees
Turkey	14,430
Mexico	11,359
Australia	7452
Israel	7431
Korea	7406
Japan	6117
Estonia	5478
Ireland	4630
France	4250
Italy	3520
Czech Republic	3145
Iceland	3065
Poland	2710

Source: Based on OECD (2007, Tables B5.1a).

That European higher education has a dismal future is best evidenced in a recent communiqué of the Ministers of Education:

> Ministers …. supported the idea that higher education should be considered a public good and is and will remain a public responsibility. (European Commission 2001)

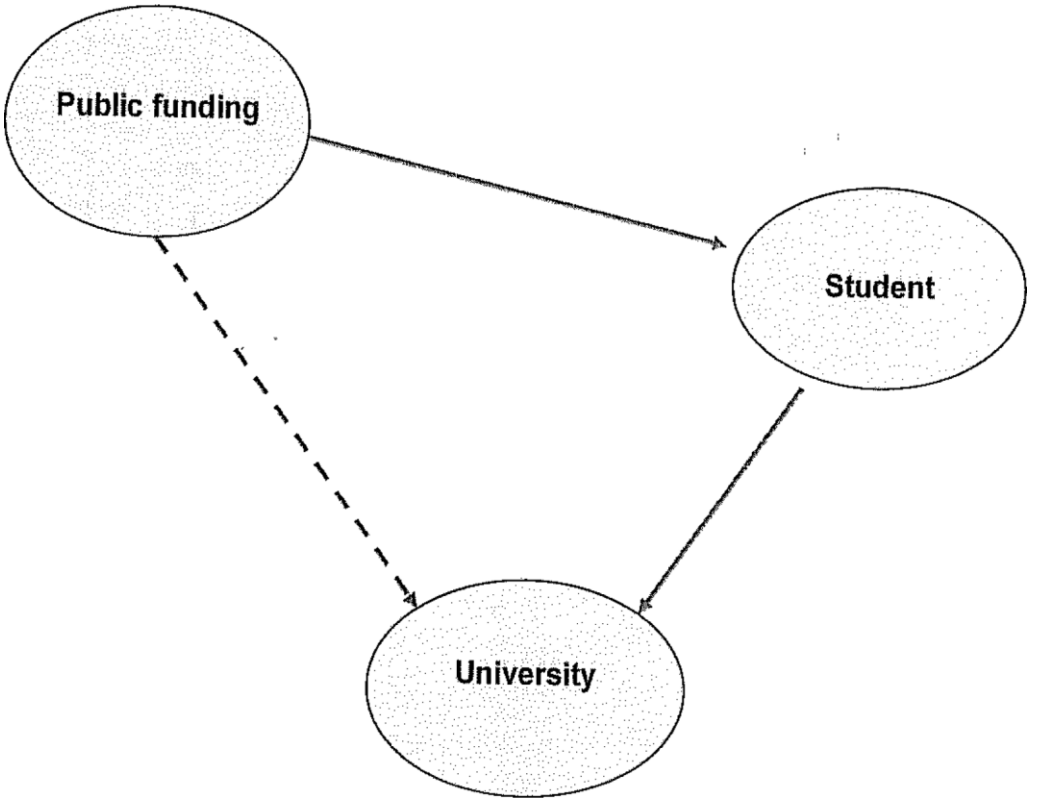

Figure 4. Direct vs. Indirect University Funding.

With such thinking prevailing among Ministers of Education, it is sad that universities will be the only remnant of nationalized industries in Europe.

Appendix 1 provides summary answers to the questions posed by the organizers of this conference.

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Appendix 1. Answering the discussion questions

Based on what was presented above, it makes it easier to attempt brief answers to the many challenging questions raised by the conference organizers. Highly recommended supplementary reading is Mishan (2002) on tuition fees and Chapman (2005) on student loans:

On tuition fees:

1. *Should tuition fees of some amount be expected from all or most students and/or parents—as opposed to an expectation of tuition fees only from some students (such as those who fail to pass an entrance examination at a high enough score to be exempt?*

As a first step, one should separate the efficiency from the equity argument and try to finance universities in a way to promote efficiency, e.g., all students should pay fees, regardless of their financial or mental ability. In a second step, equity issues can be addressed, e.g. by assisting poor students to pay the fees.

2. *Should whatever tuition fees may be charged be owed up front—that is, during study—and thus paid for mainly by parents (at least in so far as they are financially able, or should any tuition fees be deferred—that is, as in a loan—and thus paid after completion by students?*

Student fees should be charged up front, as this would have maximum effect on incentives and the demand for higher education. It is immaterial whether such fees are paid by the students or their parents. Those who cannot afford to pay the fees up front can borrow to do so, bearing the risk of their investment.

3. *If there are to be tuition fees, to what degree, and on what principle, should these vary: for example, by university (that is, by prestige and academic selectivity or by academic program (that is, humanities, management, or medicine or by level of study (that is, by undergraduate or graduate of advanced professional—as opposed to all students paying the same tuition fee?*

Fees should be determined by the full social cost of an academic program, e.g. they would be higher for medicine and lower for the humanities, higher for graduate and lower for undergraduate studies, and higher for more prestigious universities to allow for higher salaries to attract stellar faculty. Same fees for all students regardless of program, level of study or university quality would lead to inefficiency and inequity.

4. *If there are to be tuition fees, how—or by what principle—should they be established (that is, as a percentage of the underlying costs of instruction, or whatever the market will bear, or whatever is the lowest they can possibly be?*

See answer to question 3, above. Fees should be established based on the social cost of the program. Private universities can attempt to charge fees the market will bear, but if there is freedom in the entry and exit of private universities, such fees will revert to the true social cost of the program.

5. *If there are to be tuition fees, and if these are to be charged up-front and paid for mainly by parents, at what point is the student to be considered (for this purpose an adult financially responsible for his or her own expenses (including tuition fees as opposed to being considered as financially dependent child?*

One of the main points in charging fees, is to make students financially responsible. They should be fully informed on the financial risks involved and make decisions accordingly with their parents. Charging fees is expected to reduce the demand for university entry by casual students.

On student loans

1. *Shall the presumption be that all students will incur indebtedness via a tuition fee that is automatically deferred for all or most students (and possibly not even be recognized as a debt by some "borrowers", or should the student loan be available only to students who apply and qualify for the loan?*

Student loans should be available to all who apply for them, rich and poor, more able and less able. It is here that the equity argument can kick in, e.g. by giving beneficial terms to able but poor students.

2. *What should be the criteria for eligibility to borrow? Should student loans be available to all students or only to students who provide a co-signatory or are otherwise deemed to be credit worthy or only to students who can demonstrate financial need or only to students attending public universities?*

These are important details, but they are details. It should be left to the financial institution or the state loan scheme institution to set such details.

3. *How much general subsidization (that is, for all borrowers should be built into the loan program? More specifically, should the interest rate that will be paid by all or most borrowers be highly subsidized (that is, well below the market rate of interest, reflecting a substantial effective grant for all borrowers, or minimally subsidized (say, corresponding to the government's borrowing rate or unsubsidized (whatever banks and other private lenders believe they have to charge to cover all of their lending costs and make a reasonable profit?*

If student loans are subsidized we are back to square one, i.e. all efficiency and equity arguments for imposing student fees are denied. As a first step, all student loans should be unsubsidized. But wearing the equity hat, special terms could be given to able but poor students. Even partially subsidizing loans to all would be grossly inefficient and inequitable.

4. *Should the originating lender (that is, the entity to which the borrower will make payments in the repayment stage be the government or a quasi governmental entity or a bank or other essentially private entity? (At issue here is whether student borrowers will take indebtedness to the government or to a governmental agency as seriously as indebtedness to a bank or other private lender.*

Ideally the lender should be a commercial bank. Indebtedness to a government agency will be subject to political forgiveness, taking us back to square one.

5. *Who, or what entity or several entities, is to bear the risk of non-repayment, or default: the lender, the co-signatory (assuming there is one, the government, the higher educational institution, or some set of the above?*

The risk should be born entirely by the lender and the co-signatory, if there is one.

6. *Should all borrowers be responsible only for repaying a percentage of their wages or salaries until the debt is repaid in full at whatever the contractual rate of interest is, or until they have repaid for some maximum number of years (in which case, questions arise as to how to handle borrowers who are self-employed or are non-working spouses or in situations of multiple and/or uncertain employment, or who desire to emigrate? Or, should borrowers initially be expected to repay a set amount per month sufficient to amortize the debt in a reasonable number of years, and then be allowed to repay a percent of earnings only if they demonstrate that such a schedule will also amortize the loan in full, or if they are able to demonstrate that the required fixed payments would be a burden?*

These are important details, but they are details to be agreed between the borrower and the lender. Any of the ways described in the question would be fine, provided there is real repayment and not forgiveness.

7. *Shall repayments be primarily the responsibility of employers to collect through a payroll deduction (along with income tax withholding and pension or insurance contributions or should borrowers be responsible for making monthly payments (unless the employer chooses, or is required by law to deduct repayments?*

Borrowers should be responsible to repay their loan to the lender. It is immaterial whether repayments are paid through the employer or directly to the lender, provided there are repayments. Since not all graduates will have an employer (non-labor market participants or they may delay finding a job, it does not make sense to have employers collect the repayments.