

Vouchers in higher education - a practical approach

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Dieter Dohmen

Vouchers in Higher Education –
A Practical Approach

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1. Introduction

Market and market-like mechanisms to finance education have become a very popular issue around the world. Vouchers are one of these mechanisms and have been introduced in a number of countries. These include the United Kingdom for the financing of nursery education (Sparkes and West, 1998; Kreyenfeld, 1998; Kreyenfeld and Wagner, 1998; Kreyenfeld, Wagner and Tillmann, 1998); Sweden (World Bank, 1999), Chile (Gauri, 1998), Colombia (Calderón Z., n.d.), and parts of the U.S., e.g. Milwaukee in Wisconsin (e.g. Witte, 1994, 1995, 1997; Rouse 1997, 1998)¹ for compulsory primary or secondary education; and Kenya (World Bank, 1997; Johnes, n.d.) and England and Wales (West, Sparkes, and Balabanov, 1999)² for vocational education and training. It should be pointed out that it is sometimes not clear what is meant by the term 'vouchers'. For example, some kinds of per-capita spending are occasionally referred to as vouchers, whilst some experiments with school choice involve very similar ideas. Another example, the financing of further education in Austria has been referred to as 'vouchers' and contains some elements of a this approach but cannot be regarded as a voucher scheme (West, Sparkes, and Balabanov, 1999).

Up to now vouchers have been introduced to finance compulsory primary and secondary education and have tended to be directed towards low-income families to enhance their access to further schooling. They have therefore represented a kind of equality of opportunity or income supplement policy.

As far as we have been able to establish in a comprehensive survey (Dohmen and Koppenhöfer, 2000), however, no country has introduced vouchers for higher education funding. A few countries, such as Finland (Ahonen, 1996) and the Netherlands (McDaniel and Mertens, 1990) had political discussions about the introduction of a voucher scheme some years ago, while others, such as Australia (West, 1998, 1997), Germany (Dohmen and Koppenhöfer, 2000) and again the Netherlands (BdW, 2000), have recently started a discussion on the introduction of vouchers and their pros and cons.

Whilst consideration must be given to the voucher schemes for school and nursery education mentioned above, in view of the important differences between these levels and higher education, it is not possible to rely exclusively on their experience.

¹ An assessment of the U.S. experience is rather difficult as many papers and reports are ideologically biased so that it remains unclear which arguments are based on fact and which are not.

² Overviews of the international experience with vouchers are presented in West, 1996, Mangold, Oelkers and Rhyne, 1998; Dohmen and Koppenhöfer, 2000.

The following discussion starts in chapter 2 with an overview of the expectations placed on the introduction of vouchers. Chapter 3 reviews the different possibilities for the face value of the voucher whilst Chapter 4 addresses other technical questions. Chapter 5 deals with the costs of vouchers and Chapter 6 briefly reviews the international experience and debate on voucher models. Chapter 7 discusses further important issues concerning vouchers so that a conclusion can be drawn in section 8.

2. Principles and Expectations of a Voucher Scheme

A voucher is a coupon which is handed over to students or their parents and entitles them to education. The coupon represents a certain value expressed in terms of money or time.³ The students present their vouchers to the university of their choice. The university requests reimbursement of the monetary value from the government or the agency which is responsible for the voucher scheme.

Another financing mode that is very close to vouchers is the per-capita or formula funding system based only on the number of students. In this case, the university is awarded a special amount of money for each student. Thus, the major distinction between a (real) voucher scheme and per-capita funding is the coupon in the hand of the student. Whether it is linked to different allocative or distributional effects depends on certain aspects of the particular set-up of the scheme as discussed in detail later in this paper.

In an extended version of a voucher scheme the face value may cover not only the tuition fees but also maintenance. In this case, the voucher would be directed to university funding and student support.⁴ The discussion of vouchers is usually related to university funding (or more generally to institutional funding) only.

The expectation of the proponents of vouchers is that the quality of instruction will increase, as the income of a university depends on the number of students enrolled. Assuming that students base their decision on where to enrol on quality criteria, they suggest that the higher the quality of instruction at a certain university, the higher the de-

³ Another option is credit points, which would restrict the voucher to the higher education sector. If the voucher is to be introduced for further education, or such a restriction is not desirable for other reasons, it appears that a monetary voucher would be best.

⁴ One kind of student support voucher is the Danish 'Klippekortsystemet' (study card system). Students receive 70 vouchers covering their monthly expenses, 65 % of which is a grant and 35 % an interest-bearing loan, for their five years of studying, plus an accepted study extension of 12 months. Students can decide how to use their vouchers. For example, if they work part-time parallel to their course they may just want to use half of the vouchers, enabling them to extend the period of study by another term (Anthony, 1999).

mand for education at this university will be, while other universities offering lower quality will experience decreasing demand. The latter institutions will then be forced to improve the quality of their instruction. This would lead to competition based on quality. If differentiated top-up fees are accepted, which is not a necessary condition, the competition might be extended to include both price and quality.

Moreover, the proponents of vouchers expect an improvement in the performance of students and graduates because of a better match between the ability of students and the 'performance standard' of the relevant university, as well as other factors such as religion, etc.

If the introduction of voucher schemes achieved these goals it would mean that the education system would become more efficient and effective.

For countries with a comparatively low private contribution but a limited public budget, another aim might be to increase total (public and private) spending on higher education by increasing private contributions.⁵ This might allow universities to raise student intakes, an important aspect of so-called 'mass higher education', which requires additional financial resources.

If the private contribution is related to parental income and individual means the introduction of income-related vouchers is said to increase distributional justice. For those interested not only in the allocative but also the distributional effects of educational finance, vouchers are a means of income-related funding.

The school choice movement in the United States also emphasises the generally positive effects of vouchers based on the view that freedom of choice is a goal in itself. When referring to the American debate, however, it must be remembered that the arguments as well as the published findings of research reports are often based on ideology. In consequence, it is sometimes not immediately discernible what the 'real' advantages and disadvantages, or positive and negative outcomes are.

3. The Face Value of a Voucher

The face value of the voucher is one of the most important and critical issues. It may be the same for all students independent of their subject, the university or the parental

⁵ Bearnse, Glomm and Ravikumat (2000) found that a means-tested voucher leads to the highest educational expenditure but lowest public spending. Furthermore, inequality of educational resource allocation is less under a means-tested voucher scheme.

income. Another approach might be to vary the face value according to the subject studied, the level of parental income or the type of higher education institution, i.e. university or polytechnic (Fachhochschule), enrolled at.

The consequences will depend on the particular details of the voucher scheme introduced and the functioning of the system as it is now. For example, the fees charged by the universities can be restricted to the face value of the voucher or they might be allowed to charge additional fees (supplementary vouchers). Another issue is whether the costs of teaching a certain subject differ between universities, e.g. because of different student-teacher ratios or returns to scale. It must be remembered that the definition and computation of the unit costs of higher education is an unsolved problem in a number of countries, e.g. in Germany.

To simplify the discussion below, the present system of higher education will be assumed not to involve tuition fees, with students studying free-of-charge.⁶ Even if the decision to study might be influenced by the expectation of a financial return, it can still be assumed that this allows students to realise their first-best solution since their choice will not be distorted by questions of affordability or expectations of risk.⁷

3.1 Standardised Face Value

The face value of a standardised voucher for all students can be related to the minimum, the average or the maximum expenditures of a student. Such a system would not take into account variations in (total) expenditures according to the subject of study, medicine being much more expensive than law, economics or the humanities. Each student would receive a voucher with the same face value.

⁶ Within the European Union fees are charged in less than 50 % of member countries (Belgium, Italy, the Netherlands, Spain, Portugal, and the United Kingdom) (Dohmen and Ullrich, 1996). Even within these countries there are exceptions. For example, in the United Kingdom the Scottish Parliament abandoned the fees recently introduced by the New-Labour Government. The result is only slightly different if the former EFTA states are also taken into consideration as of these fees are charged only in Switzerland and Liechtenstein. It can thus be safely asserted that only half of the countries in Western Europe charge fees while the others do not. The Austrian Government has announced that fees will be introduced for the academic year 2001/2.

⁷ That this is too restricted an assumption becomes evident when the situation in Germany is considered, for example. Here more than 20 percent of students cannot study their subject of first choice because of limitations and restrictions due to the so-called *Numerus-clausus*, which restricts the numbers of students admitted for a certain subject, and a centralised and bureaucratic clearing system allocating students to universities. For example, every year 2,500 students change from another subject to medicine, while the same number are prevented from enrolling for this subject. On average, 16 % of all first-year students enrol for a subject that was not their first choice and thus prevent other students studying their preferred subject. 24 % of first-year students enrolled in language and cultural studies say it is not their first choice, while 32 % of students opting for these subjects were excluded on the grounds of overcrowding (Dohmen and Koppenhöfer, 2000).

If a voucher covers only the cost of the least expensive subject (mini-voucher)⁸ students wanting to study other subjects will have to pay fees which are proportionally higher according to the cost of their subject.⁹ Thus, the demand for expensive subjects will decrease. Distributional issues can be involved, too, because students from low-income families cannot afford expensive subjects if the relevant fees are not reimbursed by a system of income-related student grants, the introduction of which would increase the public costs of a voucher system.¹⁰ If the returns are lower for humanities or other low-cost courses low-income students will earn lower salaries on graduation and social mobility will be restricted. If the returns for low-cost courses are comparable to other subjects this problem will not arise. The public costs for such a mini-voucher can be expected to be lower than for the present system.

An average voucher will be linked to zero costs for subjects which are less expensive and with fees for subjects which cost more than the average. The demand for courses without fees will increase and decrease for courses incurring fees. The effects on students from low-income families will be lower than for mini-vouchers as they can opt for more subjects without paying fees. But unwelcome distributional effects may arise without a complementary reimbursement scheme. From the (important) viewpoint of the treasury, without further details it can only be said that the public costs would be roughly the same as for the present system. Since a reimbursement scheme would be desirable, an average voucher might well turn out to be more expensive than the present system.

In the case of a maxi-voucher, all students can study without fees. For the students such a scheme is more or less equal to the no-cost system obtaining in a number of European countries where students do not have to pay fees (e.g. Germany, Austria, France, Scandinavia). Such a system has no negative distributional effects because every student can opt for any subject without restrictions; but if there is no incentive to use scarce resources efficiently it could become a very expensive system.¹¹ It would be at least as "expensive" as the present system, so that the best that could be hoped for is no increase in public expenditure.

In the latter case the crucial question is whether the performance of graduates will improve or not. The higher expenditures could be justified only if their performance was

⁸ Such a 'mini-voucher' has been suggested by Friedman (1955, 1971) for school education.

⁹ The possibility that such a voucher might be introduced without the introduction of tuition fees seems unrealistic and is therefore neglected.

¹⁰ It must be remembered that the complete scheme would be much more complicated and involve higher administrative costs.

¹¹ Such a mechanism might be to allow the vouchers to be spent on further education or post-graduate studies.

better.¹²

Which students gain and which students lose depends on the system that is to be replaced. If a mini-voucher were introduced, for example, in a country without fees, all students would be worse off except those who – in both cases – could opt for the same subject without fees. The maxi-voucher would abolish fees for all students so that all would gain.

Cross-subsidisation might be another important issue. Universities with a high share of low-cost subjects are better able to cover their costs than universities offering expensive subjects, so that the former would have a comparative advantage. Universities specialising in expensive subjects such as medicine or engineering will be doubly disadvantaged, however, since they cannot cross-subsidise. Thus, one can expect the supply of expensive courses to be too low while the supply of 'cheap' courses might be too high because universities have an incentive to offer subjects which cover their costs.

3.2 Variation in Face Value

The face value of a voucher can be varied according to several criteria: the subject of study, parental income, and – in some countries – the type (university or polytechnic [Fachhochschule]) or even delivery costs of the institution.¹³

3.2.1 Variation according to subject

At present, the public contribution in most countries differs according to the subject of study.¹⁴ Varying the face-value of vouchers could leave the average level of public contribution unchanged and would lead to the least change in allocative and distributional effects. This is likely to be an important issue for politicians, so that a 'subject voucher' might have a comparative advantage in this regard.

If the costs of instruction do not differ between universities the voucher will cover the same proportion of costs at all institutions. Thus, the students can opt for any university without having to consider fee differences.¹⁵ The competition between universities will be

¹² In the final analysis, it depends on the social returns whether the higher expenditures can be justified or not. However, if the higher expenditures lead to increased returns the present system is suboptimal.

¹³ As the latter criteria are more or less directly covered by a later chapter they will not be considered separately here.

¹⁴ This applies in most countries independently of the existence of tuition fees. If fees are charged they are often not fixed according to the costs of subject studied but are equal for all students at a particular university. If they do vary according to subject, as in Australia, for example, the private contribution is divided into broader fee categories which do not exactly correspond to the different expenditures per student. For example, students of law have to pay the same fee as students of medicine.

¹⁵ Although differences in maintenance costs might be relevant.

related to quality only.¹⁶

If the expenditure per student differs between universities, e.g. due to different student-teacher ratios or benefits of scale, the face value can be based on the minimum, the average or the maximum costs. In this case, the students' decision on where to enrol will be based on both cost and quality, thus extending competition to more aspects than just quality. If benefits of scale are of relevance for higher education, which seems to be a realistic assumption, larger universities would be able to deliver their courses at lower costs than smaller ones. Thus, if the face value of the voucher were fixed at the minimum level of costs, smaller universities would have a structural comparative disadvantage, as they would have to charge higher fees due to their higher costs of delivery.¹⁷

If students react because of higher prices this could lead to a crowding out effect to the disadvantage of smaller universities. Such a process might be limited by the fact that bigger universities cannot grow without a loss in quality or increase in costs due to the additional courses which have to be provided.

The problems and restrictions mentioned above lose in importance if the face value of vouchers is related to the average costs and become insignificant for maxi-vouchers. If students have an incentive to use their vouchers effectively, the costs of a maxi-voucher scheme might not be higher than for the present system.

In the case of such a cost-sharing approach between society and students the government has two options for fixing the face value of a voucher. If the expenditures for subjects (and / or universities) differ, one can standardise either the face value of a voucher or the private contribution of students. In the first case, the private contribution might differ absolutely or relatively according to the costs of delivery at a particular university, while in the latter case the public contribution would vary. Fixing the voucher value at an absolute level would appear to be the best course, as the administrative costs will be less.

It should be borne in mind that unless the face value of the voucher covers the full cost of studying, the voucher scheme will have to be accompanied by a reimbursement system for students who cannot afford the fees out of their own (or parental) income. This would cease to be important if the voucher was related to parental income.

¹⁶ In an extended approach, taking additional factors influencing student choice into consideration, other aspects might be important, too. For example, for 2 out of 3 German students the proximity of the university to their parental home is a major factor, while quality of delivery or average duration of study is of minor importance.

¹⁷ This argument is not limited to vouchers but is also relevant for formula funding.

3.2.2 Variation according to parental income

As has been pointed out by Dohmen and Koppenhöfer (2000), vouchers in compulsory education have been directed towards equality of opportunity and enhanced access to further schooling for children from low-income families.

In most countries of the world students receive an allowance to cover their maintenance costs. The level of this allowance depends on parental income.¹⁸ This principle of means-testing could be extended to institutional funding, where reimbursement policies are often income-related. Public funding is often not related to personal income but spent equally on all students (of a certain subject). The distributional problems of such policies have often been mentioned and criticised (e.g. Gröske, 1994; Holtzmann, 1994).¹⁹

The major advantage of an income-related voucher is the combination of favourable allocative and distributional effects, which are commonly addressed by separate systems. The public subsidy for a student can be clearly and directly linked to the (parental) income of this student and his ability to bear the costs of studying by himself. A higher public contribution could be spent on students from low-income families while students from higher-income families can afford to pay a higher fee. Pauly (1967) argues that an income-related voucher would work best.²⁰□□

Economic arguments for means-tested public spending rely on several factors: the higher risk aversion of students from low-income families, the affordability of fee payments, better opportunities for diversification due to higher monetary assets, parents' willingness and ability to bear the costs of studying, a lower preference rate for present consumption, etc. However, it must be borne in mind that an adequate parental contribution can be expected only if parents are highly altruistic and can afford such a subsidy. In other words, only parents with a very high income can be expected to bear the full ex-

¹⁸ As far as I know only the Scandinavian countries support their students totally independent of parental income. Some other countries, such as the Netherlands, provide a certain amount of money independent of family income (Dohmen and Ullrich, 1996).

¹⁹ The arguments offered by Sturn and Wohlfahrt (1999, 2000) to refute these studies are not convincing, even if some of their detailed criticisms might be justified. Sturn and Wohlfahrt mainly argue that graduates repay the public contribution that has been spent on their university education. This is due to the higher marginal tax rate payable for a certain amount of money if it is earned within a shorter period of time. For example, one million dollars earned within 35 years might be subject to a marginal tax rate of 35 % while for the same amount earned over 40 years the tax rate would be only 30 %. The higher tax payment of about \$ 50,000 can be regarded as repayment. Even if this repayment is deducted from initial public spending, this is not the matter at issue. Private funding must be compared with public funding and only if tax payment is higher in the case of public funding than in the case of private funding is the redistribution argument refuted. For a more detailed discussion of Sturn and Wohlfahrt's study (1999, 2000) see Dohmen (2001).

²⁰ Kreyenfeld, Wagner, and Tillmann (1998) support such a scheme for nursery education for the same reasons.

penses for fees and maintenance. In the case of low-income families the interests of the parents might conflict with the children's interest in studying (Dohmen, 1999). Since interest-bearing loans are often not an acceptable alternative for students from socially disadvantaged backgrounds, they would refrain from studying.

If such a voucher scheme is not only applied to institutional funding but also to living expenses it could replace the present separate systems and thus possibly reduce the administrative costs of educational funding.

Theoretically, the higher contribution of students from higher socio-economic backgrounds might lead to a reduction in demand. In practice, however, this risk appears minimal as the price-elasticity of demand should be low. If the introduction of the income-related voucher means lower costs for students from low-income families their participation should increase because of a higher price-elasticity of demand. This should more than compensate for any possible reductions in demand from high-income students.

Technically, such a negative correlation between parental income and the face value of a voucher can be achieved if the face value constitutes part of the taxable income of the parents. Such an approach works only if the marginal tax rate is progressive. The public subsidy can be calculated on the basis of a deduction of the higher tax payment from the face value of the voucher.

The advantage of such a solution is its comparatively low administrative costs. The gross value of the voucher would be the same for all students (of a subject), whilst the addition of the subsidy to the taxable income would not be very time-consuming. The alternative, calculating the individual face value of the voucher separately within the voucher system, would, by contrast, consume much more time and involve higher administrative costs.²¹

3.3 Summary

In this chapter we have discussed some aspects of the face value of the voucher. The survey has been limited to some general and common considerations while others have been neglected. For example, Arons (1972) proposes a voucher model that differs according to parental income and whether a place at a public or a private institution is re-

²¹ So far, the discussion has neglected the possibility that students may have their own income, which would have to be added to the parental income to calculate the family income, or that there may be other reasons to treat students independently of their parents, e.g. if they have already worked for several years before studying.

quired.²² Before introducing vouchers in practice other issues would also have to be considered, e.g. raising the face value for disadvantaged students due to their additional needs or introducing other compensatory mechanisms.²³

It appears that voucher models with a standardised face value would lead to a greater distortion of allocative as well as distributional effects. Students would have strong incentives to enrol for subjects that are less expensive due to the fact that they would otherwise have to bear part of the costs. This could be expected to be particularly important for students from low-income backgrounds. Only a maxi-voucher would allow all students to choose their preferred subject. On the other hand, such a voucher would have unwelcome distributional effects as students from higher socio-economic backgrounds would gain comparatively more than low-income students, i.e. it would have a redistribution effect from low- to high-income families.

Furthermore, students must have an incentive to use their voucher effectively to avoid scarce public resources being wasted, e.g. being allowed to use it for further education.

Schemes with vouchers whose face value varies according to the subject and/or parental income can be expected to function more efficiently. The former approach would allow all students to study their favourite subject while the latter would charge fees according to the individual's ability to pay and would contribute to social justice. Summing up, the face value of an 'ideal' voucher would vary according to subject and parental income. The disadvantage of such a model is that the administrative costs are likely to be higher than for other approaches, so that means-tested vouchers might be a 'second-best' option. For governments not willing to introduce fees the only solution would be to introduce a subject-related voucher.

4. Other Technical Aspects

4.1 Lecture courses, semesters or complete degree courses – what should the voucher cover?

Another issue of practical relevance is the question of what the voucher is to cover. Should it cover the complete degree course lasting three to five years or should it be divided into 'sub-units', such as semesters or individual courses of lectures. This question would appear not to have been considered up to now because it is of minor importance

²² Such a scheme would have distorting effects to the advantage of institutions receiving a higher public subsidy.

²³ For example, in Sweden 10 % of the public budget for education vouchers is allocated to compensation for special purposes, e.g. higher expenditures due to the enrolment of disadvantaged students (World Bank, 1999).

for nursery and school vouchers. In higher education different set-ups might lead to different allocation effects.²⁴

It should be ensured that the sum of all the vouchers which the student receives is sufficient to cover the total costs of a complete course of study or a certain proportion of it²⁵ and we will assume this for the purposes of the discussion below.

A single voucher to cover a complete course of study appears far too inflexible, allowing neither for a change of university nor for a change of subject. Thus, students would not be able to profit from experience, by moving to another university, for example, if the quality of instruction at the first was poor. Consequently, 'full-study' vouchers will not be considered here.

In contrast to many other countries, Germany does not make a (formal) distinction between part- and full-time students. All students are regarded as full-time even though one third define themselves as part-time (Berning, Kunkel, and Schindler, 1996). The latter can easily be distinguished by identifying the number of students who have exceeded the regular duration of study; roughly one third of all students are enrolled longer than the minimum time required by regulations.

If students take different numbers of courses, a 'semester voucher' would not be able to cater for such differences. It would treat all students equally, whether they took five, seven or ten courses. This would mean that students who need more time than envisaged by the regulations and extended their study would need either more vouchers, leading to higher expenditures, or would have to bear a higher share out of their own pockets. A semester voucher might also constitute an incentive for universities to increase the number of students who fail a course and thus have to repeat it, since they would gain the full voucher (fee) for an additional semester. Universities might also have no incentive to provide a particular course, even if it were an essential part of a degree course.²⁶

²⁴ It should be noted that the allocation effects of nursery or school vouchers might also differ depending on whether the costs for one year are covered by one, two or even more vouchers.

²⁵ It would be no problem to increase the number of vouchers to cover courses which have to be repeated due to failed examinations or illness, etc. It is also possible to provide more vouchers to allow students to take additional courses. This might be important for the discussion in Germany as many students and politicians protest that the position of students would worsen if the number of vouchers did not enable them to take more than the absolute minimum number of courses necessary to graduate successfully. In fact, it is quite unclear whether many students take more courses than is absolutely necessary. From my personal experience, I doubt it. On the contrary, I suspect that many students do not even take all the required courses, learning from books instead of attending lectures and seminars. In the present system in some countries like Germany, the demand for additional courses does not lead to higher educational expenditures because real demand and public or private spending are not linked. However, costs will increase if this affects the duration of study – an important but often neglected aspect.

²⁶ In Germany we face a situation where universities do not and/or cannot provide a sufficient number of places on

We can thus conclude that only a 'course voucher' would allow students to be highly flexible and act according to their personal interests. It would even enable them to combine (part-time) work and study, an issue which might well gain in importance in the future. Such a voucher would not increase the total (public) expenditure on higher education as the same amount of money (vouchers) would be spent, but over a variable period of time. Its effect on social and private costs would depend on the special circumstances.

For systems like the German one, such a voucher would have another positive aspect: The universities would be able to identify the proportion of their students studying part- or full-time. They would then be able to increase the overall intake, which is now limited by a formal calculation which assumes that all students are studying full-time.²⁷ Moreover, it would allow students to take courses from different faculties for which these faculties are directly reimbursed. Otherwise, a way would have to be found of enabling the faculties to be reimbursed according to the number of students taking each course.

Finally, 'course vouchers' would make it possible to attend courses at different universities. It would allow 'cream skimming'; students who are very mobile would be enabled to attend those courses which are provided with the highest quality of instruction and to avoid low quality courses.

4.2 Who receives the voucher – the university, the faculty or the lecturer?²⁸

For people who are not familiar with the German situation, the condition that the revenue from vouchers or fees must be used to increase the budget of the university and not for a corresponding reduction of public contributions might seem somewhat surprising. However, the introduction of fees or other private contributions has often been abused to increase the revenue of the public budget rather than the universities' budget.

The issue in this section might seem a very simple one. If the quality of instruction is to

practical courses. This *is directly linked to an extension of study time* so that students cannot complete their studies within the time frame.

²⁶ In Germany we face a situation where universities do not and/or cannot provide a sufficient number of places in practical courses. This is directly linked to an extension of study time so that students cannot complete their studies within the leads to students studying longer and not completing their studies within the appropriate time frame.

²⁷ This calculation verges on the absurd as it formally defines how many students may attend special kinds of courses. The main objective of these regulations is to allow courts to establish whether all available places have been filled by students who wanted to enrol. There has been a full-scale debate on whether vacant positions for lectureships can be included in the calculation or not.

²⁸ Though the following addresses the particular situation in Germany, it should also offer some interesting insights into how systems work in general.

be improved and students attend a particular course due to the quality of instruction, it would appear reasonable to suggest that the lecturer should receive the voucher, especially since, in the preceding section, we have argued that the voucher should be a 'course voucher'.

However, such a model might appeal to the self-interest of lecturers and promote a tendency, at least in some countries, to favour their own courses when laying down course requirements. If the co-ordination unit or the dean is weak, as is quite often the case in Germany, the list of required courses would become longer and longer, extending the duration of study without improving the quality.

Furthermore, students profit not only from the services of lecturers, but also from the library and administrative services which are commonly not provided by lecturers. Obviously, it is better not to reward the lecturer only.

On the other hand, even if students and lecturers gain from centrally provided, i.e. university-wide, services, this cannot justify rewarding the university as a whole. The 'university course' as a product is provided by separated faculties, often with their own administration and counselling facilities, and so it is they who should receive the voucher and apply for reimbursement of the monetary value from the government.

More importantly, the 'university course' as a product is a combined effort of the staff of a particular faculty so that a 'faculty voucher' would strengthen the team-building process. Individual lecturers would be more willing to assist and help out in the faculty in the case of unfilled vacancies, illness or other problems if the faculty gained from it.

Up to now some services have been provided most efficiently at the university level. Where this is the case settlement procedures would have to be introduced, such as already exist in more decentralised systems of higher education than those in Germany.

4.3 Which regional government bears the costs?

This section applies to countries with state or regional competencies and accountabilities, such as Germany, Belgium, Switzerland, the United States and many others.

For example, in Germany universities are financed by the *Laender* which run them. This sometimes leads to political decisions at the regional level which are completely at odds with the national interest. For example, Berlin has introduced a so-called *numerus-clausus*, i.e. a limitation on annual student enrolment, in computer science, while the federal government has introduced a 'green card', or special work permit, for foreign computer experts because of a lack of German specialists. Other *Laender* have already reduced, or are

about to reduce, their student intake due to financial constraints, while yet other (industrial) *Laender* continue to raise their capacity. The general trend is to assume a growing number of students over the next few years.

As a general approach the costs of education should be borne by the state or region that reaps the returns to education, i.e. the state where the graduate becomes a taxpayer. In practice, this would be difficult to ensure as the returns will be realised after graduation and not during the period of study.

If there was a close correlation between the state where a student studied and the state where the same student subsequently started to work, there would be a justification for making the state providing the university education also responsible for university funding. This justification could be extended by arguments based on the returns to the local economy accruing during the period of study, e.g. expenditures for maintenance, value added tax and perhaps other tax payments, or the benefits to local companies relying on comparatively 'cheap' student workers, etc.

On the other hand, if the graduate returns to the state where he comes from, and where his parents live, this latter state should at least partially bear the expenditures as it will get the most benefit from this education. Where almost all students study in their home town or return to their state of origin, as is the case in some of the German *Laender*, the 'home' state should bear the costs.

Summing up, it appears that there is strong evidence that the state where the student comes from, i.e. the 'home state', should bear the costs.

5. The Costs of a Voucher System

To date the public and private costs of a voucher system for higher education have not been investigated since no system has come close enough to being introduced for such a calculation to be really necessary. Cost calculations with respect to school vouchers have been undertaken by Levin and Driver (1997), showing that a voucher system could be very expensive. Referring to the situation in the United States, they estimate an increase in expenditures of about 25 %. This is due particularly to high costs for the transportation and accommodation which in their opinion are necessary to enable students to choose 'far away' schools, i.e. to provide them with a real opportunity of school choice (see also Patrinos and Ariasingam, 1997).

However, as Levin and Driver (1997) correctly point out, one can neither make general calculations nor draw general conclusions, as both depend on the special setting of a

scheme and the particular environment where it is to be established.

On the other hand, some cost reductions, especially for administration, would seem possible, as negotiations between universities and the Ministry of Education could be abolished, or at least minimised, and the separate systems of institutional and individual financing combined. Whether other cost reductions would be possible would depend on the concrete set-up and the present system they replace, as mentioned above.

If the voucher carries a monetary value, the cheapest procedure would be to establish an account in the student's name and to debit the appropriate amount for each course.

6. International Experience and Discussion

As has already been pointed out, international experience with vouchers in higher education is rather limited. As far as we know, the only practical experience has been with the GI-Bill for American soldiers returning from World War II.

The term 'voucher' has often been used to describe per-capita spending or formula funding but seldom for a voucher system where the student has a coupon in his hand.

In recent years, however, vouchers have been discussed in a number of countries, such as Finland, Australia and the Netherlands.

6.1 GI-Bill

The so-called GI-Bill was introduced for the benefit of soldiers returning from World War II, who received government subsidies for educational purposes (Guerin, 1997). The voucher had a value of \$ 500 per year and could be used to obtain tertiary education at any college the returning soldier chose. It was combined with a monthly stipend to cover living expenses.

This procedure resulted in increasing enrolments for college education, mostly in private institutions, and thus succeeded in reducing the entrance barriers to higher education. The high costs of the GI-Bill forced the government to reduce the value for soldiers returning from the Korean war.

6.2 Australia

In 1997, the Australian government established a commission, the so-called West Commission, to review the higher education system and to come up with suggestions on how to improve the quality of the higher education sector. In its final report, the 'West

Report', published in 1998, the commission demanded a greater orientation towards the interests and needs of the students and developed a model in which the university was no longer financed directly by the government but through vouchers.

The analysis of the present system led to the following conclusions:

- As fee rates (HECS) are fixed by the government it is an incomplete price mechanism,
- its setting hinders a direct relation between students and universities,
- the present fee differentiation is not based on a solid and sound foundation,
- due to the low interest rate, which is based on the inflation rate, it contains another public subsidy which is not transparent.

Viewing these points in the light of other features, such as a lack of cost-consciousness and insufficient incentives to ensure subsidies were used economically, the commission concluded that the present system revealed significant weaknesses. "[I]ts incentive structures are perverse and it lacks flexibility" (R. West, 1998, p. 113).

On the basis of these findings the commission developed another system aimed at creating the opportunity for all Australians to gain access to higher and further education. Educational finance, they felt, should be more dependent on student demand. The interim report (West, 1997) contained a more detailed proposal than that presented in the final report (West, 1998).

Every Australian was to receive a public subsidy covering on average 80 % of the total costs of studying in the present system. The universities were to be responsible for fixing the fee rates according to their own needs. The system was to be introduced in four steps:

1. Universities were to be responsible for fixing the fees within a certain limit to be determined by the government. The government funding of the universities was to be related to the number of students enrolled. Additionally, students were to be allowed to take out an interest-bearing loan. The universities were to provide information about the subjects and courses they offered, which was to be monitored by an independent commission so that students would be guided towards the right decisions.
2. Public funding was to be made available to private universities.
3. In the third phase, the financing of the universities was to depend solely on student choices while the government determined how many student places they were willing to support. The spending for each university depended on the number

of students enrolled at that university as a proportion of all students. A certain amount of places were to be reserved for minorities and disadvantaged students. Furthermore, the universities were to receive additional grants for subjects for which there was insufficient demand but which were perceived as important for the society.

4. Finally, all Australians were to receive an entitlement for life-long learning. The government would only finance a basis, with allocations for a certain subject differing according to their costs, the costs for medicine being higher than for history, for example. The voucher could be used not only for tertiary but also for vocational education and training, or further education.

The new financing system aimed at a new understanding of universities, which were to envisage themselves as a service industry and provide their students with interesting courses and attractive objectives. Finally, it should be noted that the commission consciously refrained from using the term 'voucher'.

Nevertheless, the proposal was heavily criticised by many organisations in the education system. The Committee of Vice-Chancellors rejected the model after the publication of the final report although they had earlier supported a pilot scheme for a demand-oriented financing system.

The government feared higher private contributions for students and an increasing administrative burden for the state. Student organisations argued that some groups of students would be disadvantaged and the long-term planning of universities would become much more difficult.

Judging by the reaction observed so far it seems improbable that a voucher system will be established in Australia in the near future.

6.3 Finland

In 1994 the Finnish Ministry of Education started a project to investigate possible voucher models and their effects on the higher education system. The results of this study were presented by Ahonen (1996).

Three goals were very high on the agenda of this project: more efficient use of resources, a reform of the financing system, and a stronger position for students. The weaknesses of the present system are: students are enrolled at several universities and prevent other students from attending these universities; they have limited choice; there is only a weak linkage between supply and demand; and the budget of the universities de-

depends entirely on government spending and is rather limited.

In contrast to our definition of a voucher with monetary value, the Finnish project defined a voucher as having a time value, e.g. one semester or month. Five models were discussed and these are briefly presented below.

In the so-called 'complete model' the universities would be financed totally by vouchers administered as a 'voucher account' e.g. by the national pension institute or by a separate voucher company. At the beginning of a student's course, an initial supply of vouchers would be deposited in the account for use over the student's whole life-time. Part-time students would have to redeem only half a voucher per unit of study (month, term).

The vouchers would be handed over to the university which would then request reimbursement of the monetary value from the Ministry of Education. An important feature was that the face value of the voucher would be fixed by annual negotiations between ministries and universities.

As a second option the committee discussed a 'partial model' in which only a certain share of the total university budget, e.g. 30 %, would be allocated through vouchers, while the rest would be based on other criteria.

Two other approaches were directed only at mobile students, funding only courses of study at universities in cities away from the student's home. A fifth 'wide and complete' model was addressed to the tertiary and the further education sectors.

We have not been able to establish what has happened with these proposals but obviously none has so far been introduced.

6.4 The Netherlands

The first discussion on vouchers in the Netherlands took place roughly ten years ago. A new debate has recently started but is limited to final-year students at HBOs (*Hogher Beroopsonderswijs*/Higher Vocational Education), which are similar to the German *Fachhochschulen*.

In the first approach, in 1988, students were to be equipped with a certain number of credits enabling them to 'buy' educational services from several institutions. In addition, a system of quality control was to have been introduced to ensure that the quality of instruction was appropriate (McDaniel and Mertens, 1990).

Turning to the details, the students were to receive a contingent of 189 credits. It was assumed that they would need on average 168 credits to finish a four-year course of

study, so that they would have 21 credits for additional courses or repetition, etc. Secondly, the students were to pay a fee of 16 % of the average costs of all subjects to get the initial number of credits. If the credits were used up they could get additional credits by paying fees of about 50 % of the average costs. To provide students with an incentive to study quickly, they would have been able to obtain some additional credits allowing for postgraduate studies.

The vouchers were to be valid for 12 years, whereby students with maintenance grants were required to use a minimum of 28 credits per year or lose their public assistance.

The proposal was rejected with the argument that it would be too bureaucratic and contain too many contradictory objectives. In addition, the scheme's long-term financial sustainability was questioned. McDaniel and Mertens (1990) also questioned the ability of first-year students to organise their studies rationally and to plan appropriately. Experience having revealed that freshmen were often not in a position to act and plan rationally, too much was being expected of them, these authors argued.

The recently discussed vouchers for final-year students at HBOs were envisaged as a pilot scheme to gain experience on how vouchers might work in practice. According to our information, the Dutch parliament has rejected this proposal because of its limited scope.

6.5 Summary

The only experience with vouchers is based on the American GI-Bill enabling returning soldiers to get access to higher education. As far as can be established it achieved its goal of providing them with a sound educational foundation for their future lives. However, as it was restricted to only a comparatively small group one cannot deduce any further evidence from it for voucher schemes in general.

Apart from this, there has been no practical experience with the effects of vouchers in higher education. Although studies have been carried out of practical experience with nursery or school vouchers we cannot draw upon any clear findings as the results which have been presented are mixed. Their relevance is additionally diminished by the fact that all schemes introduced to date have been restricted to low-income families.²⁹

Even if the empirical basis is weak and discussions about the establishment of vouchers in higher education have not yet led to any practical conclusions, there is no reason to reject such schemes out of hand, as Mangold, Oelkers and Rhyn (1998) do. Nonetheless,

²⁹ A comprehensive overview of the worldwide experience with vouchers is presented by Dohmen and Koppenhöfer, 2000.

there are obviously strong political and probably practical objections to the introduction of vouchers.

7. Discussion – Linking Theory to Practice

7.1 Do students act rationally in economic terms?

The economic theory which has provided the basis for many discussions on the pros and cons of vouchers assumes that people act rationally in economic terms. For students deciding about enrolment for university courses this means that they review the costs and benefits of a course and choose the option with the highest net return.

At least for Germany, which I know best, one can say that this assumption does not hold true. 66 % of German students prefer to study at a university which is close to their parental home, 47 % decide on the basis of private relationships, while one third take the environment of the university (i.e. the city where the university is located, cultural aspects, etc.) into consideration, and less than one third rely, even partially, on factors related to their studies (i.e. quality of instruction, range of courses available, duration of study, etc.) (Lewin et al., 1996, 1997).³⁰

50 % of all students do not even consider another university, only being prepared to study at the one institution. This might mean that they cannot study their preferred subject if it is not offered or if places are limited. 15 % of all German students study a subject which is not their first choice and in doing so prevent the same proportion of students from studying their subject of first preference.

Summing up, it appears that many students do not decide rationally in economic terms, i.e. as economists want them to decide. And, as McDaniel and Mertens (1990) have pointed out, (first-year) students might not be in a position to plan and structure their studies as deliberately and logically as theory expects and requires.

Yet even if there are arguments enough to fuel a critical debate on the rationality of students, this does not necessarily mean that the introduction of a voucher system would reduce the efficiency of higher education. On the contrary, I assume that it would make the higher education system more efficient and more effective.

Even in the present system, students have to take decisions which are often without any effect on the university. In several countries, universities do not even have any incentive to tailor their range of courses to the interests of students but are motivated only by

³⁰ Students were allowed to choose more than one criterion.

the interests of the individual lecturers and professors. One effect that vouchers might have is link supply and demand more closely, with demand being based on the interests and needs of the students. For example, courses or subjects might be offered where there is student demand for them and not where ministries want them to be offered. Furthermore, the number of enrolments might be more closely related to student demand since universities would have an incentive to provide a sufficient number of places, whilst in the present system they have an incentive to keep students out.³¹

Because the students bear the positive or negative consequences of their decisions, although they are open for advice, their interests and needs should be addressed by the universities.

Even if one is to draw upon the experience that students in other countries, such as the United Kingdom or the United States, may decide more rationally than students in Germany,³² it is quite unclear whether this is valid for the majority of the students or only for those opting for one of the more prestigious universities. There is some evidence of a kind of selection bias, meaning that those students who perform better might tend to take decisions on quality differences rather than other criteria, while students who perform less well do not, basing their decision instead on other criteria.

Summing up, the major allocative effect of a voucher would be a better link between students and universities even if students do not act as rationally as economists suggest.

7.2 Who chooses? Who loses?

The assumption by Levin (1975) that only families of higher socio-economic status will benefit from more school choice has proven right. This has been established by West and Pennel (1997) for England and Wales and by Gauri (1998) for Chile. Witte et al. (1994) and Witte and Thorn (1996) revealed that choice is positively related to educational background (especially of mothers) even though the Milwaukee Parental Choice Programme was directed towards low-income families.

An interesting feature is that quite a number of parents do not make use of their extended choice opportunities (West and Pennell, 1997 with further citations) or are not informed about the quality of schools in their neighbourhood (Gauri, 1998).

Whilst it is true that these findings cannot be directly transferred to higher education

³¹ There may, however, be reasons to limit enrolment, e.g. if demand far exceeded the needs of the economy, however that was determined.

³² Some might argue that they have better information about the differing quality of instruction, etc.

because students, coming disproportionately from higher socio-economic backgrounds, are more homogenous, it seems that even students often do not exercise their options or are insufficiently informed. However, since in contrast to nursery or school education university students are not automatically assigned to a particular institution they already have to take a decision in the present system. Nor is it clear whether the group of students who fail to exercise the options available to them and those who decide to study close to their parental home are from lower socio-economic backgrounds or are equally distributed through all families.

On the one hand, relying on welfare economics, one could argue that those who opt for another school are better off, while those who do not vote are not worse off, so that the net effect would be positive. On the other hand, if those who make use of their opportunity to choose tend to be members of certain social groups this would lead to (unwelcome) segregation. Although desegregation is more important for nursery and school education it is not that important for higher education.

If the conjecture proves correct that better-off and higher-achieving students take decisions based on quality differences, and can afford to study at expensive universities, while others face some restrictions, the overall effect is quite unclear. It is even possible that the variation increases while the average remains unchanged.

7.3 Does competition improve the performance of educational institutions?

This is the most crucial question for any market-oriented reform. Only if competition improves the performance of the system over all would such a reform increase the efficiency and therefore enhance the performance of the system.

The discussion of higher performing educational market systems was initiated by Coleman et al. (1981, 1982) and Chubb and Moe (1990). They stated that private schools perform better when the characteristics of the students are taken into account. Especially Chubb and Moe concluded that an expansion of private schools would be necessary to improve the performance of the whole system.

These investigations have been challenged and strongly criticised because of methodological errors and weaknesses (see e.g. Bryk and Lee, 1992; Weiss, 1992, 1993). If these are taken into account, the findings reveal little or nothing.

Others, too, such as Hoxby (1994), who suggested that competition leads to enhanced performance in both private and public schools, have been severely criticised. Levin (1998, p. 376) states that hers is "a crude estimate of school subsidies as a proxy for vouchers,

and she lacks direct measures for many key variables in her model." Furthermore, Kane (1996) pointed out that her model is based on some arbitrary assumptions, which lead her to her results and findings.

Rouse (1997, 1998), referring to the Milwaukee programme, found that students from private schools had better results in Maths than pupils from public schools. In contrast to Greene et al. (1996), however, she was not able to prove higher reading scores. Finally, she herself states that in view of the limited size of the project one cannot draw any general conclusion.

Even Witte et al. (1995), who monitored the Milwaukee project over five years, could not find significant differences in the performance of students from public and private schools. These findings were criticised by Greene et al. (1996), who argued that the control groups were not comparable.

Nor did West and Pennell (1997) find any clear picture as regards the effects on performance of the school choice programme in England and Wales.

Parry (1997) found for Chile that whilst public schools perform better if resources and attending students are taken into account, he discovered a specialisation between public and private schools. Public schools are better for less able students and private schools are better for 'high-quality' students.

To sum up, in view of the mixed findings of the studies reviewed one cannot yet draw any clear picture as to whether competition improves the performance of the educational sector or not (Lamdin and Mintrop, 1997; Levin, 1998).

In view of the fact that all the studies we have reviewed so far have investigated the effects of competition on the performance of the school sector, we cannot draw any conclusion for higher education. Here the evidence may suggest that market systems work better than state-organised systems but it appears that there is no clear proof.

Rangazas (1997) has presented a theoretical explanation of why the results might not be as clear as one would expect at first glance.

Firstly, only those students who are dissatisfied with their present university might be willing to move to another.

Secondly, even these students would only move if the expected returns were higher than the costs. Thus only those (few) students expecting to receive a net return would move. They would gain from the introduction of vouchers. Furthermore, the lower-performing universities could respond with a price reduction so that competition would not necessarily result in better performance even if a cost reduction meant an increase in

efficiency.

Thirdly, assuming that at least some universities are intent on maximising profit, the introduction of vouchers could also lead to higher prices and a reduction in quality. This would be the case if private universities had a strong (regional) market position.

We are thus led to the conclusion that the effect of competition on the overall performance of the higher education system would depend on the number of students who might be willing to change universities and on the reaction of the universities themselves.

8. Conclusion

It would seem that the only general conclusion this paper can draw is that no general conclusion can be drawn. The effects of a voucher scheme depend on the particular environment, its set-up and the performance of the present system. Vouchers might have more advantages in countries where the present system is strongly regulated by the government than in countries where there is already some kind of competition. However, in this case other market-oriented models such as formula funding might lead to more efficiency, too. Yet even compared to these vouchers might have three and a half advantages:

- (1) Vouchers are much more flexible and more open for different settings than a formula funding scheme. For example, they can be related to parental income and, if given a monetary value, can be used for further education. Part-time students can be adequately catered for without any additional administrative effort.
- (2) They are better in terms of distributional effects, as they can be more closely related to the individual income of a particular student.
- (3) They are a little easier to administer if a student moves to another university.

Finally, another aspect might also be of benefit: Vouchers might have a stronger psychological effect on students as they may provide more direct evidence to students and parents that the income of a university or school depends on their personal decision. This relationship might be made even more obvious if the voucher was handed over by the student directly to the faculty .

Bibliography

- Ahonen, Esa (1996), Vouchers in higher education, in: Higher Education Management, Vol 8, No. 1, pp. 19-25
- Anthony, Susanne (1999), Student Income and Study Behaviour in Denmark, in: European Journal of Education, Vol. 34, No. 1, pp. 87-94.
- Arons, Stephen (1972), Peaceful Uses of Education Vouchers, in: George R. La Noue (Hrsg), Educational Vouchers: Concepts and Controversies, New York-London.
- BdW (2000), Experiment: Vouchers in vraaggestuurd dual onderwijs, preliminary report on behalf of MKB-Nederland and HBO-Raad.
- Bearse, Peter, Gerhard Glomm, B. Ravikumar (2000), On the political economy of means-tested education vouchers, in: European Economic Review, Vol. 44, pp. 904-915.
- Berning, Ewald, Ulrike Kunkel, and Götz Schindler (1996), Teilzeitstudenten und Teilzeitstudium an den Hochschulen in Deutschland, hrsg. vom Bayrischen Staatsinstitut für Hochschulforschung und Hochschulplanung, Band 44, München.
- Bryk, Anthony S., Valerie E. Lee (1992), Is Politics the Problem and Markets the Answer? An Essay Review of Politics, Markets, and America's Schools, in: Economics of Education Review, Vol. 11 (4), pp. 439-451.
- Calderón Z., Alberto (1996), Voucher Program for Secondary Schools: The Colombian Experience, World Bank Human Capital Development and Operations Policy Working Papers, Washington (<http://wbIn0018.worldbank.org/>).
- Chubb, J., T. Moe (1990), Politics, Markets, and America's Schools, Washington.
- Coleman, J.S., T. Hoffer, S. Kilgore (1982), Cognitive outcome in public and private schools, in: Sociology of Education, Vol. 55, pp. 65-76.
- Coleman, J.S., T. Hoffer, S. Kilgore (1981), Public and Private Schools, in: National Opinion Research Center (Hrsg.), Final Report to the National Center for Education Statistics, Contract No. 300-78-0208, Chicago.
- Dohmen, Dieter (1999a), Ausbildungskosten, Ausbildungsförderung und Familienlastenausgleich. Eine ökonomische Analyse unter Berücksichtigung rechtlicher Rahmenbedingungen, Berlin.
- Dohmen, Dieter (2001), Studiengebühren – Traum oder Trauma, FiBS-Forum Nr. 7, Köln (forthcoming)
- Dohmen, Dieter and Silke Koppenhöfer (2000), Hochschulfinanzierung durch Bildungsgutscheine (Funding Higher Education by Vouchers), unpublished Project Report, Cologne.
- Dohmen, Dieter and Rüdiger Ullrich (1996). Ausbildungsförderung und Studiengebühren in Westeuropa (Student Support and Tuition Fees in Western Europe), FiBS-Research Report No. 1, Cologne.
- Friedman, Milton (1971), Kapitalismus und Freiheit (Kapitalism and Freedom), Stuttgart.
- Friedman, Milton (1955), The Role of Government in Education, in: Solo, R. A. (ed.), Economics and the Public Interest, New Brunswick-New Jersey, pp. 123-144.
- Gauri, Varun (1998), School Choice in Chile: Two Decades of Educational Reform, Pittsburgh.
- Greene, Jay P., Paul E. Peterson (1996a), Methodological Issues in Evaluation Research: The Milwaukee School choice Plan, Harvard University.
- Greene, Jay P., Paul E. Peterson, Du Jiangtao, Leesa Boeger, Curtis L. Frazier (1996b), The Effectiveness of School Choice in Milwaukee: A Secondary Analysis of Data from the Program's Evaluation, University of Houston, Harvard University.
- Grüske, Karl-Dieter (1994), Verteilungseffekte der öffentlichen Hochschulfinanzierung in der Bundesrepublik Deutschland – Personale Inzidenz im Querschnitt und Längsschnitt, in: Reinart Lüdeke (ed.), Bildung, Bildungsfinanzierung und Einkommensverteilung, Schriften des Vereins für Socialpolitik, N.F., Vol. 221/II, Berlin
- Guerin, Dave (1997), Entitlements in Education: Empowering Student Demand, New Zealand, <http://www.ed.co.nz/papers/entitlements.htm>
- Holtzmann, Hans-Dieter (1994), Öffentliche Finanzierung der Hochschulausgaben in der Bundesrepublik Deutschland – Verteilungseffekte, allokativen Folgen und Reformbedarf, Forum Finanzwissenschaft, Band 5, Nürnberg.
- Hoxby, Caroline Minter (1994a), Do private schools provide competition for public schools?, National Bureau of Economic Research, Working Paper No. 4978.

- Hoxby, Caroline Minter (1994b), Does competition among public schools benefit students and taxpayers?, National Bureau of Economic Research, Working Paper No. 4979.
- Johnes, Geraint (n.d.), Initial Thoughts on the Development of the Jua Kali Training Fund – Voucher System, Kenya, mimeo.
- Kane, Thomas J. (1996), Comments on chapters Five and Six, in: Helen F. Ladd (Hrsg.), Holding Schools Accountable, Washington, DC.
- Kreyenfeld, Michaela (1998), Neue Wege in der Finanzierung sozialer Dienste: Kinderbetreuung in Großbritannien Diskussionspapiere aus der Fakultät für Sozialwissenschaft Ruhr-Universität Bochum 1998/1
- Kreyenfeld, Michaela, Gert Wagner (1998), Der gescheiterte Gutscheinersuch für Kinderbetreuung in Großbritannien, in: Theorie und Praxis der Sozialen Arbeit, Heft No. 9.
- Kreyenfeld, Michaela, Gert Wagner, Katja Tillmann (1998), Finanzierungsmodelle sowie Verteilungs- und Finanzierungsrechnungen für eine bedarfsgerechte Kinderbetreuung von Vorschul- und Schulkindern in Deutschland, unveröffentlichter Endbericht, Bochum und Frankfurt (Oder),
- Lamdin, Douglas J., Michael Mintrom (1997), School Choice in Theory and Practice: Taking Stock and Looking Ahead, in: Education Economics, Vol. 5 (3), pp. 211-244.
- Levin, Henry M. (1998), Educational Vouchers: Effectiveness, Choice, and Costs, in: Journal of Policy Analysis and Management, Vol. 3, pp. 373-392.
- Levin, Henry M. (1975), Educational Vouchers and Educational Equality, in: Martin Carnoy (Hrsg), Schooling in a Corporate Society, 2. edition, New York.
- Levin, Henry N., Cyrus E. Driver (1997), Costs of an Educational Voucher System, in: Education Economics, Vol. 5, No. 3, pp. 265-283
- Lewin, Karl, Ulrich Heublein, Dieter Sommer, Jochen Schreiber (1997), Studienanfänger im Wintersemester 1996/97 – an Fachhochschulen erstmals mehr Abiturienten als Studienberechtigte mit Fachhochschulreife, hrsg. Hochschul-Informations-System (HIS), Reihe Hochschulplanung, Band 128, Hannover.
- Lewin, Karl, Ulrich Heublein, Dieter Sommer, Jochen Schreiber (1996), Studienanfänger im Wintersemester 1995/96 – erstmals mehr Studienanfängerinnen als Studienanfänger an Universitäten, hrsg. Hochschul-Informations-System (HIS), Reihe Hochschulplanung, Band 120, Hannover.
- Mangold, Max, Jürgen Oelkers, Heinz Rhyn (1998), Die Finanzierung des Bildungswesens durch Bildungsgutscheine – Modelle und Erfahrungen, Studie im Auftrag der Erziehungsdirektoren des Kantons Bern, Bern.
- McDaniel, O.C., Mertens F.J.H. (1990); Autonomie und Qualität in der niederländischen Hochschulpolitik, in Schramm, Jürgen (ed.), Modernisierungsstrategie für die Universität, Frankfurt a.M.
- Parry, Taryn Rounds (1997), Theory Meets Reality in the Education Voucher Debate: Some Evidence from Chile, in: Education Economics, Vol. 5, No. 3, pp. 307-33
- Patrinos, Harry A., and David L. Ariasingam (1997), Decentralization of Education: Demand-Side Financing, The World Bank, Washington, D.C.
- Pauly, Mark V. (1967), Mixed Public and Private Financing of Higher Education: Efficiency and Feasibility, in: American Economic Review, Vol. 57, pp. 120-130
- Rangazas, Peter (1997), Competition and Private School Vouchers, in: Education Economics, Vol. 5, No. 3, pp. 245-263
- Rouse, Cecilia Elena (1998), Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program, Quarterly Journal of Economics, Vol. 113, pp. 553-602
- Rouse, Cecilia Elena (1997), Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program, National Bureau of Economic Research, Working Paper No. 5964, Cambridge, Mass.
- Sparkes, Jo, Anne West (1998), An Evaluation of the English Nursery Voucher Scheme 1996-1997 in: Education Economics, Volume 6, No. 2, pp. 171-185.
- Sturn, Richard, Gerhard Wohlfahrt (2000), Umverteilungswirkungen der öffentlichen Hochschulfinanzierung in Deutschland, Gutachten im Auftrag des Deutschen Studentenwerkes, Graz.

- Sturn, Richard, Gerhard Wohlfahrt (ed.) (1999), *Der gebührenfreie Hochschulzugang und seine Alternativen*, Verlag Österreich, Wien.
- Weiß, Manfred (1993), *Der Markt als Steuerungssystem im Bildungswesen*, in: *Zeitschrift für Pädagogik*, Vol. 39, pp. 71–84
- Weiß, Manfred (1992), *Der Mythos der Marktüberlegenheit im Bildungswesen – Reflektionen zu „Politics, Markets, and America’s Schools“*, in: *Zeitschrift für internationale Erziehungs- und sozialwissenschaftliche Forschung*, Vol. 1, pp. 137–153
- West, Anne, Hazel Pennell (1997), *Educational Reform and School Choice in England and Wales*, in: *Education Economics*, Vol. 5, No. 3, pp. 285–305
- West, Anne, Jo Sparkes, and Todor Balabanov (1999), *Demand-side financing: A focus on vouchers in post-compulsory education and training, A discussion paper and case studies*, report prepared for CEDEFOP, London.
- West, Edwin G., *Education vouchers in practice and principle: a world survey*, 1996, (http://www.worldbank.org/html/extdr/hnp/hddflash/workp/wp_00064.html)
- West, Roderick, et al. (1998), *Learning for Life, Final Report: Review of Higher Education Financing and Policy*, Commonwealth of Australia, Department of Employment, Training and Youth Affairs, Canberra.
- West, Roderick, et al. (1997), *Learning for Life, Review of Higher Education Financing and Policy. A Policy Discussion Paper (interim Report)*, Commonwealth of Australia, Department of Employment, Training and Youth Affairs, Canberra.
- Witte, John F. (1997), *Achievement Effects of the Milwaukee Voucher Program*, Wisconsin.
- Witte, John F. (1995), *Fifth-Year Report The Milwaukee Parental Choice Program*, Wisconsin-Madison.
- Witte, John F. (1994), *Milwaukee Parental Choice Program: Fourth Year Report*, Madison.
- Witte, John F., Christopher A. Thorn (1996), *Who Chooses? Voucher and Interdistrict Choice Programs in Milwaukee*, in: *American Journal of Education*, Vol. 104.
- Witte, John F., Christopher A. Thorn (1994), *Fourth-Year Report The Milwaukee Parental Choice Program*, Wisconsin-Madison.
- World Bank (1999), *Economics of Education: The Nacka Voucher System for Education and Child Care (Sweden)*, <http://wbIn0018.worldbank.org/hdnet/hddocs.nsf> (14.12.99)
- World Bank (1997), *Assessment of the Jua Kali Pilot Voucher Program*, mimeo, Washington.