Too Much Competition in Higher Education?

Some Conceptual Remarks on the Excessive-Signaling Hypothesis

By Karsten Mause*

ABSTRACT. Within the economics of higher education, there is a small but influential literature that describes and analyzes the outcomes of competitive processes on markets for higher educational services. Colleges and universities in the United States currently invest a vast amount of resources in order to attract well-qualified students. Costly activities like advertising, infrastructure investments, the recruitment of academic stars, or the granting of merit-based tuition discounts can be interpreted as different forms of “market signaling” in the sense of Spence. According to some social science authors, these signaling activities have reached a dimension that has to be classified as excessive or socially wasteful from a welfare-economic viewpoint. The present article makes some conceptual remarks on this excessive-signaling hypothesis, and intends to contribute to the debate about the (potentially) harmful and beneficial effects of competition in higher education.

I

Introduction: The Business of Attracting Students

Within the economics of higher education, there is a small but influential literature that examines the outcomes of competitive processes...
on markets for higher educational services. In a series of papers, Frank (2001, 2004) and Winston (1999, 2000, 2004), among other things, address the important question of whether the competition among colleges and universities for well-qualified students in some market segments of the U.S. higher education sector has reached an intensity that has to be classified as excessive or “socially wasteful” (Frank 2001: 11) from a welfare-economic perspective. In order to attract students with certain abilities and skills, academic program providers may mount advertising campaigns, publish information brochures on their websites, or offer campus tours. Besides these and other marketing efforts, colleges and universities may invest into the construction and maintenance of buildings and infrastructure, offer merit-based tuition discounts to the most able applicants, or try to recruit academic stars to attract prospective student-consumers’ attention. And, last but not least, it can be observed that investments in sports (i.e., sports teams, gymnasiums, stadiums, and the like) are also used as instruments to attract students.1 In his article “Higher Education: The Ultimate Winner-Take-All Market?,” Frank characterizes the current competitive situation on some markets in U.S. higher education as follows:

Top students . . . are an essential ingredient of elite educational status, and efforts to attract these students have kept pace with efforts to attract star faculty. Universities and colleges up and down the academic totem pole are spending far more than ever on brochures, videos, mailings, multistate tours by admissions officials, and other efforts to woo top students. . . . Colleges and universities are spending more now not just to attract good students but also to keep them happy once they arrive. . . . Yesterday’s double-room occupancy standard in dormitories is giving way to apartment-like suites that house one student per bedroom. Centralized athletic complexes are giving way to in-dorm training facilities that resemble expensive private health clubs. Dining halls are being supplanted by facilities modeled after the food courts in up-scale shopping malls. Multimillion-dollar, state-of-the-art classroom facilities are increasingly part of the mix. Universities that fail to offer such facilities often fail in their efforts to attract the disproportionate share of high-achievement students. (2001: 9)

From the viewpoint of information economics, program providers’ advertising, infrastructure investments, recruitment of academic stars, granting of merit-based tuition discounts, acquisition of accreditation labels, or participation in rankings can be interpreted as different
forms of “market signaling” in the sense of Spence (1973, 1974). However, according to Frank (2001, 2004) and Winston (1999, 2000, 2004), the competition among colleges and universities for well-qualified students, which—in information-economic terminology—can be considered as a signaling game, generates “socially wasteful” (Frank 2001: 11) outcomes.

The remainder of this article is organized as follows. After presenting the simple welfare-economic reasoning underlying the excessive-signaling hypothesis (Section II), the following sections point out some conceptual problems that arise by the application of such reasoning to competitive processes on markets for higher educational services. Section III tries to interpret what is meant by “socially wasteful” in the literature under investigation. Section IV deals with measurement problems that arise when one tries to identify the private and societal costs and benefits of higher education institutions’ signaling activities. Section V introduces another economic way of looking at signaling. From an information-economic perspective it is argued that the seemingly “socially wasteful” seller signaling may be an important facilitator of trade in the higher education marketplace, where quality information is asymmetrically distributed between the market parties. After presenting both points of view—namely, the wasteful and beneficial faces of signaling—Section VI addresses the crucial question: How much competition among higher education institutions is too much?

It has to be mentioned at the outset that neither Frank (2001, 2004) nor Winston (1999, 2000, 2004) in their articles make use of the term “excessive signaling” that is used throughout the present article. But this term precisely expresses the empirical phenomenon at which they take a critical look: U.S. higher education institutions, which take part in so-called positional arms races, devote scarce resources for “positioning” and “repositioning” (Winston 2000) that, in Frank’s and Winston’s views, have reached an excessive dimension. The following two quotations from Frank (2001) may illustrate the apparent excess of institutions’ signaling activities:

In this chapter, I’ll discuss some of the reasons for the growing importance of academic rankings. I’ll also explore how our increased focus on them has affected the distribution of students and faculty across schools, the
distribution of financial aid across students, and the rate at which costs have been escalating in higher education. (Frank 2001: 3, emphasis added)

In light of the growing importance of rank in the educational marketplace, universities face increasing pressure to bid for the various resources that facilitate the quest for high rank. These pressures have spawned a “positional arms race” that has already proved extremely costly and promises to become more so. (Frank 2001: 8, emphasis added)

II
The Excessive-Signaling Hypothesis

Higher education institutions that find themselves in competition for more-or-less talented students have an incentive to inform potential student-consumers about the quality characteristics of their respective programs of study. In game-theoretic terms, program providers’ competition for students can be interpreted as a zero-sum game. Before the beginning of each academic year, there is a given pool of more-or-less qualified applicants. Further, each applicant who enrolls in a certain academic program, of course, is no longer available to the enrollment managers of competing program providers. In order to fill the seats within their academic programs, higher education institutions thus have to think about strategies to attract students. In doing so, program providers in the United States have to take into account that in the U.S. higher education system there is some kind of “academic pecking order” (Frank 2001: 5, 10) among colleges and universities, which is generated by rankings.

Within the influential U.S. News & World Report rankings, for example, the “academic quality” of a national university or liberal arts college in the 2007 edition of America’s Best Colleges is measured by the following criteria: assessment by administrators at peer institutions (“peer assessment”; weighting: 25 percent of an institution’s overall score); retention of students (“retention”; 20 percent); “faculty resources” (20 percent); “student selectivity” (15 percent); “financial resources” (10 percent); “alumni giving rate” (5 percent); and “graduation rate performance” (5 percent). The latter is defined as “the difference between the proportion of students expected to graduate and the proportion who actually do” (Morse and Flanigan 2007). The categories just mentioned are then subdivided into several indicators
“used to measure academic quality.” To calculate the student selectivity score, for example, the following indicators are applied:

test scores of enrollees on the SAT or ACT tests (50 percent of the selectivity score); the proportion of enrolled freshmen who graduated in the top 10 percent of their high school classes (40 percent); and the acceptance rate, or the ratio of students admitted to applicants (10 percent).

Without going further into the details of the ranking methodology (see Morse and Flanigan 2007), it is important to note that the “quality” of an institution’s student body is one of the “indicators of academic excellence,” which receives a weight of 15 percent within an institution’s overall score. Moreover, it should be noted that the *U.S. News & World Report* ranking currently is “the ‘gold standard’ of the ranking business” (Ehrenberg 2003: 146).²

Hence, institutions that (1) try to “to move forward in the academic pecking order” (Frank 2001: 5), or (2) just want to maintain their relative position in this order, among other things, have to invest resources to attract students of a high-as-possible quality. Moreover, as Frank (2001: 5) further accounts, program providers have to realize that there are:

penalties on those who begin to slip in the rankings. When Cornell’s Johnson Graduate School of Management jumped from eighteenth to eighth in the *Business Week* rankings in 1998 (the largest such advance in the poll’s history), applications for the following year’s class rose more than 50 percent. To an extent rivaled perhaps only by the market for trendy nightclubs, higher education is an industry in which success breeds success and failure breeds failure.

Besides this anecdotal empirical evidence, Monks and Ehrenberg (1999) and Meredith (2004) in their data found “hard” empirical evidence for the hypothesis that an institution’s improvement in the relative position attained within the *U.S. News & World Report* ranking results in an increased demand by applicants in the following academic year. Furthermore, it is important to note that applicants—in their role as the observers of the positional arms race—expect that the choice of a higher education provider of a certain quality level has an impact on their future career and income prospects on the labor market (Eide et al. 1998; Brewer et al. 1999; Hoxby 2001; Black et al. 2005).³
Under the conditions characterized above, the rational program provider invests into marketing efforts, infrastructure, and other student-attracting signaling activities mentioned above until the expected marginal private benefit, $MPB$, from signaling (in the form of an increasing quantitative demand and/or the enrollment of better-qualified applicants) equals the marginal private cost or $MPC$ of market signaling (in the form of money, time, and effort devoted to signaling activities). That is, the individual program provider’s signaling optimum is reached at the point $MPB = MPC$. This investment behavior is completely rational from the viewpoint of the individual program provider:

Yet when all schools increase such expenditures, their actions largely cancel one another out. The additional spending inflates costs, but in the end has little impact on the ultimate distribution of students. (Frank 2001)

In other words, each single competitor actually may consider it as economically reasonable to reduce signaling efforts to a minimum. The saved signaling expenditures instead could be invested directly in the improvement of teaching and research at the respective university, for instance. But colleges and universities that do not want to fall behind their competitors have to invest scarce resources to partake in the (positional) competition for students. According to Frank, the signaling activities of each competitor impose negative externalities (so-called positional externalities) on the other competitors, which result in a suboptimally high level of market signaling on the social scale.

To illustrate his excessive-signaling argument, Frank takes colleges’ and universities’ marketing expenditures as an example:

In the realm of marketing, for example, the *socially optimal* allocation would be to increase marketing expenditures until the *social value* of the improved match quality thus obtained was exactly equal to its cost. Individual universities have powerful incentives to push marketing expenditures past that point, however, because each dollar they spend creates the additional private benefit of helping lure a good student away from another university. The rub is that these private benefits sum to zero on the *social scale*, since one school’s gain is offset by another’s loss. From a *social perspective*, then, it would be better if all schools spent less. Yet no school dares cut its own expenditures unilaterally, just as no nation dares reduce its spending on armaments unilaterally. (2001: 11, emphasis added)
Readers who are familiar with the basic concepts of the economics of information surely will have noticed that Frank's theoretical reasoning is based on the overinvestment effect that was elaborated in the 1970s by Jack Hirshleifer in a series of papers. Frank does not explicitly mention the information-economic works of Hirshleifer. But with his excessive-signaling hypothesis, Frank—consciously or unconsciously—rests on the overinvestment reasoning à la Hirshleifer. 

Applied to the context of higher education: when the individual program provider's expected marginal private benefit, MPB, from a signaling action exceeds its marginal social benefit or MSB, then this is likely to result in a socially inefficient overinvestment in signaling activities. Program providers in their competition for the most able students then have an incentive to further invest in costly signaling activities although the socially optimal level is exceeded. Under these circumstances, signaling activities are socially wasteful from a welfare-economic point of view. Providers' individually rational behavior leads to a collectively undesirable market outcome.

To overcome such a socially inefficient situation, Winston (2000) proposes that competitors in a certain market segment (e.g., the top 30 elite universities) should collectively agree on limiting marketing expenditures and other efforts to attract students. In view of the history of military arms races, Winston (2000: 15) notes that “[t]he end of an arms race can come through an agreement to stop the competition, an agreement reached for the common good or imposed externally.” In a similar vein, Frank (2001: 11) proposes a so-called positional arms control agreement: in such agreement he sees a possible solution to (1) restrict “socially wasteful” competition in a highly competitive market segment of the higher education sector, and (2) “to generate socially preferred outcomes” (emphasis added).

III

What Is Meant by “Socially Wasteful”?

Attentive readers may have been wondering about the emphases added in the previous section to highlight the attribute “social.” In a famous article, Hayek (1957) poses the questions: “What is ‘social’? What does it mean?” Against the background of the excessive-
signaling argumentation presented in the preceding section, the question arises of what Frank (2001, 2004) actually means by using the word “social” within his positional-arms-race reasoning. By contrast, although also pointing out the vast amount of resources devoted to (re-)positioning in academic arms races, Winston (1999, 2000, 2004) does not use the word “social” within his reasoning.

For example, in his 2001 paper Frank sometimes speaks of “socially wasteful” competition but actually seems to mean wasteful or inefficient from the viewpoint of the collective, the group of competitors as a whole:

[W]hen reward depends on rank, behavior that looks attractive to each individual often looks profoundly unattractive from the perspective of the group. Collusive agreements to restrain these behaviors can create gains for everyone. (Frank 2001: 11)

At the same time, in this paper Frank assesses the impact of competition in higher education on society as a whole. As noted above, Frank uses welfare-economic terminology to define the socially optimal allocation of scarce resources to marketing efforts or other signaling activities. The socially optimal level of signaling is reached at the point at which the marginal social benefit $MSB$ from signaling equals its marginal social cost $MSC$. But what does “social” mean in this context?

The social costs of marketing, for instance, could be defined here as the publicly financed marketing expenditures by colleges and universities in a certain, geographically defined higher education system (e.g., the U.S. higher education sector). Following this possible interpretation, these costs are societal in the sense that they are borne by society as a whole, more precisely, by the taxpayers in the respective jurisdictions. And, of course, public money spent on signaling is no longer available for alternative uses such as national defense, police, environmental protection, foreign aid, or public school funding, for instance. But with regard to the U.S. case that is analyzed in the positional-arms-race literature, it has to be taken into account that not only scarce public resources (e.g., public funds) are used for signaling. The elite institutions that currently participate in the “positional arms race” in the U.S. higher education sector are primarily private colleges and universities. For example, within the *U.S. News & World Report*
2007 ranking category “Top National Universities,” five of the top 30 universities are public institutions; under the top 20, there is no public institution. Within the ranking category “Top Liberal Arts Colleges,” 22 of the 215 ranked liberal arts colleges in the United States are public institutions; none of the public institutions can be found under the top 80.

Admittedly, many of the private “signaling superpowers” are financed by public funds to a certain extent. To illustrate, Table 1 shows the average revenue structure of public and private degree-granting institutions in postsecondary education in the fiscal year 2000–2001, according to the statistical information provided by the U.S. Department of Education (2006). But it is questionable if the amount of public subsidies justifies that, for instance, governmental authorities intervene in private program providers’ autonomy to decide whether to spend their individual budget for teaching, research, or signaling activities. And, as we will see at the end of the following section, there are in fact authors who propose governmental activities to limit apparently “socially inefficient” competition in the higher education sector. Before asking for governmental intervention, however, it seems to make sense to distinguish whose resources actually are “wasted” through market signaling in higher education.

Moreover, at this point the question emerges of whether—apart from publicly financed signaling activities—there are other social costs of competitive signaling, that is, costs that have to be borne by society as a whole. For instance, does competition among universities for students create negative externalities for unaffected third parties, in other words, members of society who are not engaged in the higher education system? And are there social benefits that may accrue from signaling that is financed by public funds and/or general taxpayers’ money?

Frank (2001: 11) argues that an additional dollar spent on marketing creates a marginal social benefit (termed “social value”), writing that “marketing expenditures in some instances may facilitate an improved match between students and schools.” To a certain extent, advertising in this view serves an information and coordination function within the higher education sector. The socially optimal allocation of scarce resources devoted to marketing would be reached at the point
Table 1


<table>
<thead>
<tr>
<th>Sources of funds</th>
<th>Public Degree-Granting Institutions</th>
<th>Private Not-for-Profit Degree-Granting Institutions</th>
<th>Private For-Profit Degree-Granting Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total revenue (in thousands of U.S. dollars)</td>
<td>$176,645,215</td>
<td>$82,174,492</td>
<td>$4,967,700</td>
</tr>
<tr>
<td>Sources of funds (percentage distribution)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student tuition and fees</td>
<td>18.1%</td>
<td>38.1%</td>
<td>87.4%</td>
</tr>
<tr>
<td>Federal appropriations, grants, and contracts</td>
<td>11.2%</td>
<td>16.3%</td>
<td>3.8%</td>
</tr>
<tr>
<td>State appropriations, grants, and contracts</td>
<td>35.6%</td>
<td>1.4%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Local appropriations, grants, and contracts</td>
<td>4.0%</td>
<td>0.6%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Private gifts, grants, and contracts</td>
<td>5.1%</td>
<td>19.3%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Endowment income, investment return</td>
<td>0.8%</td>
<td>—</td>
<td>0.4%</td>
</tr>
<tr>
<td>Educational activities</td>
<td>2.8%</td>
<td>4.2%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Auxiliary enterprises (e.g., residence halls,</td>
<td>9.3%</td>
<td>10.6%</td>
<td>3.5%</td>
</tr>
<tr>
<td>food services)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitals</td>
<td>9.5%</td>
<td>8.7%</td>
<td>—</td>
</tr>
<tr>
<td>Other income</td>
<td>3.7%</td>
<td>5.1%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Total revenue</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Note: Detail may not sum to totals because of rounding.

\( MSB = MSC \). In other words, arguing on the basis of welfare-economic categories, it would be reasonable from a social perspective “to increase marketing expenditures until the social value of the improved match quality thus obtained was exactly equal to its cost” (Frank 2001: 11). Without doubt, the individual suppliers and buyers of higher educational services each may have strong incentives to perfectly match program providers’ requirements with prospective students’ abilities in the individual case. However, not every observer of the U.S. higher education industry (or an industry outside the United States) may come to the conclusion that it is a “societal task” to solve private and public suppliers’ and private buyers’ matching problems. In short, it is questionable (1) whether it makes sense to denote an increased matching quality as a social benefit of signaling, and (2) whether there are other potential social benefits from colleges’ and universities’ signaling activities.

IV

Measurement Problems: The Quality of the Evidence

The papers by Frank and Winston call attention to an empirically observable phenomenon: program providers in competitively organized markets in the higher education sector of the United States do invest enormous resources to separate themselves from their competitors in order to attract the most able students. Other scarce resources for which higher education institutions may compete are, for example, private and public funds, and more-or-less qualified faculty. Frank (2001: 10) briefly summarizes the current situation with which U.S. higher education institutions are confronted as follows:

In sum, universities face increased pressure to pay higher salaries to star faculty, to spend more on marketing, more on student services and amenities, and more on financial aid to top-ranked students.

However, it has to be mentioned that the excessive-signaling argument made by Frank (2001) is unconvincing insofar as it stands on a weak empirical basis. Frank presents some illustrative examples. But beyond this anecdotal evidence, there is still the need for an empirical test of the excessive-signaling hypothesis. This would entail a careful
definition, operationalization, and measurement of the categories that are used within the welfare-economic framework.

It may be relatively easy to calculate the private costs and benefits of higher education institutions’ signaling activities within a certain market segment, provided that one gets reliable data on program providers’ signaling expenditures (advertising, infrastructure investments, etc.). The signaling expenditures then could be compared to applicant or enrollment behavior, which may serve as proxies for the private benefit from signaling in the market segment under investigation. In contrast, it seems to be a mission impossible to empirically quantify the societal costs and benefits of seller signaling in the higher education marketplace. But without sound empirical data for the cost categories used in the excessive-signaling framework, outside the model world of welfare economics it is impossible to quantify exactly whether the measured amount of program providers’ signaling activities from a social perspective is “too high,” “optimal,” or “too low” in a certain market segment at a certain point of time. Unsurprisingly, beyond anecdotal evidence Frank (2001) gives no answer to the interesting questions of how much money, time, and effort colleges and universities in a certain market segment (1) in fact spent, or (2) should spend on signaling in order to achieve a socially optimal level—that is, “to generate socially preferred outcomes” (Frank 2001: 11). However, as stated above, without a careful empirical analysis it is impossible to decide whether the empirically observable signaling investments are suboptimally high, optimal, or suboptimally low in terms of social welfare.

Both Frank and Winston do call attention to an interesting empirical phenomenon that, from their point of view, gives reason to think about limiting competition in markets for higher educational services. In addition, on the basis of more-or-less plausible cost-benefit estimates, the authors present anecdotal evidence for a highly intensive competition among program providers to attract students, which they denote a “positional arms race.” Yet against this background, the question arises whether anecdotal evidence for “excessive competition” is a sound basis for justifying (governmental) interventions into markets for higher educational services. Admittedly, neither Frank nor Winston propose governmental interventions to mitigate the
apparently “inefficient” allocation of scarce resources within the U.S. higher education system. They recommend “positional arms control agreements,” which are collective agreements among the “signaling superpowers.” This measure can be interpreted as a kind of self-regulation under which the contestants try to implement a Pareto-improving solution to the problem of excessive signaling. With regard to the papers by Frank and Winston, however, Dill and Soo (2004) in their book chapter “Transparency and Quality in Higher Education Markets” think a step further. They propose governmental activities to limit competition in the higher education sector:

On balance, however, based upon our review of the evidence on the information on academic quality currently available to buyers and consumers, we believe there is a genuine potential for market competition in higher education to promote an inefficient “academic arms race” that will contribute to a market failure. This suggests the need for some type of government intervention. (Dill and Soo 2004: 77)

However, it is noteworthy that the statement by Dill and Soo is based on the “evidence” used by Frank and Winston to illustrate their excessive-signaling argumentation. In this section, we have shed some light on the quality of this evidence. Furthermore, as already Coase (1992: 714) in his critique of “blackboard economics” has pointed out, it is questionable whether cost-benefit calculations on the blackboard of welfare economics (action X is efficiency-enhancing, action Y is efficiency-reducing) provide a sound basis for deriving far-reaching policy implications. Dill and Soo, for example, throughout their chapter obviously use the ideal of perfect competition as the reference case against which allocative (in-)efficiency is measured. As it is shown in the next section, this ideal is unattainable in real-world markets for higher educational services. Measured relative to the benchmark of perfect competition, allocative inefficiencies (= market failure) are ubiquitous. This conceptual problem will be addressed in the remainder of this article. For one should critically scrutinize policy proposals to restrain academic arms races outside the economic model world of perfect competition that are solely made on “efficiency” grounds. Rosen (1996: 135), who praises the “stimulating argument” and “intellectual challenge” provided by the aforementioned book of
Frank and Cook (1995), concludes his book review with a warning: “It’s a pretty good read, but caveat emptor on its ‘policy implications’.”

V

Another Viewpoint: Signaling as a Facilitator of Trade

Goods and service suppliers’ market-signaling activities generate a certain amount of cost in the form of money, time, and effort. The statement that signaling is an expensive enterprise is a trivial one, and can already be found in Spence’s seminal contributions to the economics of market signaling. Applied to the context of higher education, it is totally clear that colleges’ and universities’ signaling activities consume scarce resources, including money, time, and effort. As mentioned above, market signaling in higher education may take the form of program providers’ advertising, infrastructure investments, recruitment of academic stars, granting of tuition discounts, acquisition of accreditation labels, or participation in rankings.

The resources needed to finance these and other signaling activities may account for a considerable amount of a program provider’s total spending in a fiscal year. Moreover, considering the higher education industry as a whole, individual program providers’ (monetary) signaling expenditures may sum to a sizeable amount (of money). Besides this direct-cost aspect, resources spent on market signaling are certainly no longer available to other uses—the improvement of teaching and research, for example. In this vein and with respect to higher education institutions’ participation in academic rankings, Ehrenberg (2003: 158) critically remarks: “One may well wonder if the resources that each institution devotes to preparing, checking, and adjusting its data could more productively be either saved or used to educate students.”

A. The Purpose of Signaling

A public policymaker’s reaction to higher education institutions’ empirically observable signaling activities may be: “Well, colleges and universities should limit or even stop their signaling games, and invest their time, money, and energy in their core business—teaching and
research.” At first glance, this is a wise policy proposal that benefits both suppliers and consumers of higher educational services. On closer inspection, however, it becomes clear that program providers’ signaling activities serve an important function in the higher education marketplace. One has to bear in mind that on these markets prospective student-consumers are confronted with a serious informational problem: ex ante quality uncertainty in the sense of Akerlof (1970) that, under certain circumstances, may lead to adverse selection and market failure. That is, it is plausible to assume that the providers of educational services before enrollment usually are better informed about the specific quality characteristics of their programs of study than are potential students. In other words, on markets for higher educational services, quality information is asymmetrically distributed between the two market parties. Would-be students have an informational disadvantage vis-à-vis higher education institutions; the latter constitute the better informed market party.

To reduce this information asymmetry, program providers may try to reveal their quality type to potential students via advertising or other costly signals. In so doing, program providers’ signaling activities make visible quality differences between the providers of academic programs, and facilitate information-seeking students’ screening activities. For example, prospective student-customers who try to find an adequate program provider may buy college guidebooks and rankings, read universities’ advertisement brochures and websites, or ask friends, relatives, and other advisors about their opinion about certain colleges and universities. These and other screening activities are undertaken to make a better-informed choice among the wide array of colleges and universities that offer academic programs with heterogeneous quality characteristics.

In summary, from an information-economic viewpoint, the main purpose of signaling in higher education is (1) to avoid imminent market failure due to asymmetric information, and consequently (2) to allow market transactions between sellers and buyers of academic programs of different quality to take place. In this view, spending scarce resources on sending (= signaling) and receiving (= screening) quality information is one of the basic prerequisites of well-functioning markets for higher educational services. By means of
pushing quality information into the market, trade is facilitated. Program providers and students can enter into market transactions that may be beneficial for both parties. Insofar as market transactions on real-world markets cannot take place without the market participants incurring transaction costs in the prior-to-enrollment phase, signaling enables teaching and research, which can be interpreted as “downstream” activities taking place ex post, in the after-enrollment phase. In their article “The Economics of Cost, Price, and Quality in U.S. Higher Education,” McPherson and Winston (1993: 81–82) argue in a similar vein:

What Veblen called “conspicuous waste” may thus serve an economic function in an information-poor environment: spending lavishly on the package really does testify to the quality of what is inside. Locating your shop in a high-rent district, running a newspaper advertisement that is mostly white space, having the waiters outnumber the customers—all these may be ways of signaling that the product is so good you can afford to invest lavishly in making it available to people.

However, McPherson and Winston (1993) also point out that signaling as a market solution to the problem of informational market failure in higher education only functions under certain conditions. The basic condition is that it must be impossible for relatively low-quality providers to imitate the signals that are sent out by higher-quality providers. Otherwise, the latter are not able to separate themselves from “educational lemons.” In this case, the result is a pooling situation: all providers are of equal quality in the eyes of prospective students; more precisely, in this situation students, prior to enrollment, cannot distinguish whether a provider’s quality signal is credible or just cheap talk.

B. Real-World Competition Is Always Wasteful

It is also clear that in a market with perfect and therefore symmetric information (= complete market transparency), colleges and universities do not have to spend time, money, and effort on designing and implementing signaling strategies to inform potential students. Under these circumstances, devoting scarce resources to signaling and screening activities is unnecessary—it would be pure waste.
Prospective student-consumers have perfect information about the specific characteristics (price, quality, etc.) of the offered academic programs. On the supply side, higher education institutions are perfectly informed about the characteristics of each applicant (e.g., intellectual ability, willingness to pay). The condition of complete market transparency *per definitionem* is given in perfect markets for goods and services within the model world of welfare economics. In real-world markets in the higher education sector, however, sellers and buyers never meet in a situation with complete market transparency. On the one hand, this is due to the fact that market participants’ personal cognitive capacity to receive and process information is limited (Simon 1955; Miller 1956). Besides cognitive constraints, the acquisition and processing of information in the prior-to-purchase phase generates costs that have to be borne by the market participants (Stigler 1961). These transaction costs may occur in the form of money, time, and effort. Because of the fact that the product “information” is not for free, it can be assumed that actors economize their information-seeking behavior. They presumably will not strive for full prepurchase information. Rather, actors will stop their information demand at a level that is optimal from their subjective point of view.

And, last but not least, it has to be kept in mind that in markets for goods with experience qualities, full prior-to-purchase information is unachievable on the demand side of the respective markets. More precisely, the subjectively perceived quality of a lecture or the subjectively perceived quality of the mentoring system can be interpreted as experience qualities of an academic program. These experience qualities in the sense of Nelson (1970, 1974) cannot be evaluated by the student-customer a priori but can be assessed during or some time after consuming the respective services. As stated earlier in this section, in the prior-to-enrollment phase prospective students suffer from a serious informational problem: ex ante quality uncertainty.10

In summary, in light of this subsection it should be obvious that competition on markets outside the zero-transaction cost world of welfare economics—that is, on real-world markets with imperfect and often asymmetric information—does always involve the “waste” of scarce resources. Each competitive action of a public or private firm (e.g., signaling by a university via advertising) ties up scarce resources
that are no longer available for alternative uses. One neither has to be an economist nor read Hayek (1948, 1978) to understand that real-world competition is always a resource-consuming enterprise. To clarify the relationship between competitive market processes and market signaling, Spence therefore notes the following:

It is obvious that any signaling is inefficient when measured against the standard of a world of perfect information. But the world of perfect information is not a very interesting standard. Another possible standard is the world with informational gaps and no signaling. (1974: 153)

VI

The Two Faces of Signaling: How Much Competition Is Too Much?

IF HIGHER EDUCATION INSTITUTIONS have to compete for students, then these institutions have an incentive to appear in an “excellent” light in the eyes of prospective students. In order to improve its competitive position, a single college or university may employ instruments such as advertising, infrastructure investments, tuition discounts, or the recruitment of academic stars. As explained in detail above, the application of these and other instruments by colleges and universities can be interpreted as market signaling in the sense of Spence (1973, 1974). From an information-economic viewpoint, signaling contributes to counteract informational market failure in higher education (see Section V). Yet it has to be stressed that the antidote “signaling,” which in a world of imperfect information is applied to heal allocative inefficiency, itself may be a source of inefficiency. This critical and important point is taken up by the literature on positional arms races in higher education presented in this article. According to this literature, the U.S. experience suggests that “too many” resources are devoted to the business of attracting students—resources that are no longer available for teaching and research. The driving force of this signaling game is each competitor’s interest to attract the most able students. The institutional self-interest triggers off a competitive process that reminds Frank (2001, 2004), Winston (2000), and other observers of U.S. higher education of military arms races.

However, after observing the literature that deals with “positional arms races” and apparently “excessive signaling” in higher education
there remains the crucial question: How much signaling is necessary to close the informational gap between suppliers and demanders of educational services? Or, stated more generally: How much competition among service providers for potential customers is too much? As we have seen, the arms-race literature uses some basic insights from game theory as well as illustrating examples to highlight the wasteful face of signaling in higher education. Likewise, Section V of this article has presented theoretical arguments from the economics of information to highlight the beneficial face of market signaling. After presenting both faces of signaling, it would be nice to have a measurement instrument to unambiguously identify situations in which there is “too much” signaling. As has been discussed in the preceding sections, welfare economics offers an elegant theoretical framework to measure the welfare effects of signaling (e.g., the amount of waste) in theory. Unfortunately, there are some serious conceptual problems that make it difficult (most likely impossible) to use welfare theory’s “waste meter” in practice.

It was the aim of the present article to point out some of these conceptual issues. There is the danger that educational scientists, policymakers, or other observers of the higher education industry use the “evidence” from arms-race research to argue that competition among higher education institutions per se is “socially wasteful.” Before criticizing the socially inefficient “outgrows” of competition, and before implementing (governmental) remedies against “overinvestment” in signaling or “excessive competition,” it seems to be worthwhile to clarify whose resources actually are “wasted” through competitive signaling. For example, how much private/public money is invested by public/private competitors to attract students?

Besides the question who bears the costs of signaling, it has to be clarified who benefits from signaling. It is important to note, for instance, that not all of colleges’ and universities’ signaling expenditures seem to be pure waste, or just a “burning” of money. The latter may be true in the case of advertising that is purely uninformative for students who try to make better-informed enrollment decisions. But under certain conditions, student-consumers may directly benefit from program providers’ seemingly wasteful spending on signaling activities. Some forms of signaling may have a positive impact on an
academic program's quality. Take, for example, university A’s infrastructure investments, college B’s granting of tuition discounts, or university C’s recruitment of academic stars. As indicated in Section II, even Frank acknowledges:

not all expenditures in the battle for elite educational status are socially wasteful. Conveniently located workout rooms are better than distant ones, for example, and marketing expenditures in some instances may facilitate an improved match between students and schools. (2001: 11)\textsuperscript{12}

The expenditures for these costly signaling activities may (or may not) have a positive effect on students’ learning environment at the respective higher education institution. It is self-evident that only students at program providers that have made use of signaling via infrastructure investments, tuition discounts, or the recruitment of academic stars (potentially) benefit from such signaling measures. And, of course, a careful empirical analysis is needed to discover whether (or not) there is really a link between investments in market signals and institutional quality. That is, it has to be empirically analyzed which elements of an institution’s signaling package in fact have a positive impact on the quality of students’ learning environment. Beyond these measurable private benefits of signaling that may (or may not) accrue to the individual students who are enrolled in a signaling program provider’s academic program, we just can simply speculate about the potential social benefits of signaling in higher education (whatever these may be). Insofar there still applies what Spence (1974: 109) has highlighted in the final chapter of Market Signaling, where he writes: “The welfare effects of signaling activity are in need of further work, both empirical and conceptual. The empirical question is obvious: by how much do private and social returns differ?”

\textit{A. A Final Remark}

The first draft of this article ended with this quotation from Spence. Such an open ending may be justifiable in the case of movies. But like many cinemagoers, the referees and readers of scientific articles may be disappointed to see an open ending. Nevertheless, in the case under investigation there remains the unsatisfactory conclusion that more than 30 years after the publication of Michael Spence’s seminal
contributions to the economics of information (Spence 1973, 1974) there indeed is much to do regarding the empirical measurement of the welfare effects of signaling. This statement implicitly is supported by some recent and oft-cited literature reviews.

In Riley’s (2001) survey of “Twenty-Five Years of Screening and Signaling,” the term “welfare” does not appear. In his article “Signaling in Retrospect,” Spence (2002) presents “signaling models” in which “signaling equilibria” and “social welfare functions” are analyzed. Thereby also models with under- and overinvestment outcomes are examined:

The market equilibrium produces overinvestment in the signal because of the signaling effect, which is a private benefit to the investor, but yields no social benefit as its function is purely redistributive. (2002: 448)

However, Spence’s “essay is mainly about the theory of signaling” (2002: 436) and does not address the crucial issue of how to operationalize and empirically measure the used cost-benefit categories in real-world settings. Löfgren, Persson, and Weibull (2002) give a survey of Spence’s pioneering model-theoretic contributions, elaborate the “socially most efficient signaling equilibrium” for each of the selected models, and present “some applications and empirical tests of [his] models” (2002: 197). The presented empirical tests from research on labor markets indeed provide empirical support for some predictions from signaling models. But these papers do not seem to attempt to empirically identify situations in which competition on the labor market has produced a socially inefficient high or low level of signaling activity. Finally, after his review of the signaling literature, Riley comes to the following conclusion:

A large number of theoretical sorting models have been developed to explain a host of phenomena over the last two decades. The examples offered in this paper suggest that, in many cases, the models will not survive empirical scrutiny. If I am correct, it will follow that economists have not yet fully responded to the challenges laid down by this year’s Nobel laureates. (2002: 229)

With regard to the special case of competition among higher education institutions, it has been argued in the present article that the empirical measurement of the welfare effects of signaling still provides
such a challenge. Economists and other social scientists really have not made much progress figuring out how to measure the magnitude of the harmful and the beneficial effects of signaling. In the case at hand, it seems to be relatively easy to define, operationalize, and measure (1) the private costs of higher education institutions’ signaling activities (e.g., money spent on advertising) as well as (2) the private benefits resulting from these activities (e.g., more applicants). But the crucial problem is to define and operationalize a yardstick to measure whether individual institutions’ signaling activities in a certain period of time in a certain area add up to a level that is too high, optimal, or too low in terms of social welfare. In this context, among other things, the following questions arise: Can social welfare simply be measured by the sum of individual welfare levels? Which individuals should be covered by the social welfare measure? Applicants for a place at a college or university? Enrolled students? All citizens in a certain nation, society, or jurisdiction? Or only the taxpayers in the respective nation, society, or jurisdiction? Is it possible to measure individual utility gains and losses cardinally? Is there a scientific way of making interpersonal comparisons of utility gains and losses?

These and other issues have to be addressed if one tries to construct a social welfare measure of utility gains and losses that pertains to large numbers of interacting agents in market settings. This article cannot solve and does not want to solve these measurement problems. It is intended just to point out some conceptual problems that arise when one uses welfare-economic reasoning to analyze competition in higher education. So long as the sketched measurement issues are not treated and solved, the excessive-signaling reasoning stands on a weak empirical basis and, therefore, is not very convincing. However, it is on the side of those social scientists, who argue with such reasoning and point out the apparently “socially wasteful” dimension of competitive signaling in higher education, to solve the problems connected with empirical measurement.

Although some readers may be disappointed, this article has to end with the conclusion that more than 30 years after the publication of Spence’s pioneering contributions there still is the need for further research on the welfare effects of signaling activity: “The empirical question is obvious: by how much do private and social returns
differ?" (Spence 1974: 109). Even though it is unlikely that scientists will solve the measurement problems addressed above, it cannot be ruled out that another 30 years will not bring anything new to the research on social welfare measures.

Notes

1. For various reasons, many observers of the U.S. system of higher education take a critical look at colleges' and universities' sports activities. See, for example, Ehrenberg (2000: chap. 17) and Bok (2003: chap. 3), each with further references. At a conference, a colleague, among other things, made the following comment on the present article: "At my college, we often joke about how the prospective students visit the campus and are typically most impressed with our gym, etc. The parents trek over to the library."

2. Thompson (2000: 16) notes: "The U.S. News rankings are read by alumni, administrators, trustees, applicants, and almost everyone interested in higher education."

3. In this context, Frank (2001: 4) notes that "the attractiveness of a university depends strongly on the average intellectual ability of its students. Applicants want to be at a school whose students are accomplished, partly because they can learn more by interacting with such students, but also because that's where the best employers concentrate their recruiting. . . . At one small, high-quality liberal arts institution in the East, for example, 4,500 people apply each year for only 500 positions in the freshman class. At universities nearer the pinnacle of the academic pyramid, an even higher proportion of eager customers are routinely turned away."

4. Cf. Frank (2005: 639): "In contests for relative position, as in all other contests, the efforts by one contestant confer a negative externality on other contestants: anything that increases one party's odds of winning necessarily reduces the odds of others. The effect is almost always to induce some form of arms race among contestants, in which the efforts of each party serve largely to offset one another."

5. See Hirshleifer (1971, 1973) and Hirshleifer and Riley (1979). Based upon Hirshleifer (1971: 573), one could argue that quality information pushed into the higher education marketplace via signaling under certain conditions is "purely redistributive, not leading to any improvement in productive arrangements. There is an incentive for individuals to expend resources in a socially wasteful way in the generation of such information."

6. Or, as Hirshleifer (1971: 570) puts it: "the distributive advantage of private information provides an incentive for information-generating activity that may quite possibly be in excess of the social value of the information."

7. Due to its anticompetitive impact, a positional arms control agreement may have harmful effects as well. This problem is also seen by Frank (2001:
11): “Of course, cooperative agreements to limit competition can also cause harm, as in the notorious price-fixing cases of antitrust lore.” In this antitrust case, which is analyzed, for example, in Salop and White (1991) and Hoxby (2000), elite institutions in the United States were alleged by U.S. antitrust authorities to have collectively agreed on financial aid policies.

8. In his critical review of Frank and Cook (1995), Rosen (1996: 134) makes a similar point: “It is hard not to be sympathetic to Frank and Cook’s concerns. Yet the importance of the inefficiencies they claim seem to me to be greatly exaggerated. The book contains many examples, but is rather short on serious evidence that excessive rent-seeking and ‘over-fishing’ are ubiquitous in the American labor market.”

9. See Spence (1973, 1974), as well as his retrospective survey (Spence 2002) presented on December 8, 2001, in Stockholm, Sweden, on the occasion of the award of the Nobel Prize in Economics to him and his colleagues George A. Akerlof and Joseph E. Stiglitz.


12. In the next sentence, however, Frank (2001: 11) relativizes his relativizing statement and writes: “But the competitive dynamics that govern these expenditures virtually guarantee a measure of social waste.”

References


