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Can we support diversity by performance measurement of European higher education institutions?**

The overall aim of the article is to discuss different ways of assessing and handling performance differences of higher education institutions caused by varying initial conditions with regard to the student populations' diversity.

We introduce and compare two approaches we expect worthwhile discussing in the German context: On the one hand, the classification approach identifying diversity between higher education institutions is reflected. A critical look is taken at the possible repercussions of classifications on the design of university programmes.

On the other hand we introduce an alternative approach that has so far been rarely adopted in Europe. The "Australian model" is based on a statistical method that levels out different initial positions for performance indicators. This will help higher education institutions to respond adequately to different social requirements and needs of students. An arithmetical example illustrates the way the model functions.

We conclude that the "Australian model" can avoid some problems of the classification approach and an adaptation would be worthwhile for Germany.

Key words: **performance based funding, performance measurement, higher education institutions, diversity, heterogenity of students**
(JEL: I22, I23, I24, I28)

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Apart from the production of knowledge by research activities the shaping of higher education systems and their institutions is associated with the socio-political task of guaranteeing the transfer of knowledge by academic teaching. Some recent and expected developments lead to the discussion of a more thoughtful handling of diverse (potential) student population: The anticipated shortage of skilled labour intensifies the discussion about teaching in the areas of science politics and university research. Although – for the time being – the total numbers of new students are increasing for various reasons, this has not been true for all regions of Germany (cf. Dohmen, 2010). Particularly, internationalisation and the process of admitting various target groups to university studies are suggested as possible solutions for cushioning the negative consequences of the demographic change.[1] Both factors suggest that - to an ever more increasing degree - students with varying concepts and individual objectives, with different qualifications and capabilities will enter higher education institutions (HEIs). So, any discussion about the differentiation of the higher education system will imply at least two questions: Do we, firstly, expect any HEI to meet the specific needs of each and every student, or do we expect that starting from the differentiation between universities and universities of applied sciences there will be further types of HEIs, developing specific offers for specific target groups? And secondly, how will it be possible for us to take into consideration the consequences resulting from the choice of an institutional design, as to the successful graduation of the students of specific HEIs?

In this essay[2], we present two possible and already applied ways of recording the diversity of higher education systems at institution level and of taking such diversity into consideration, in terms of a performance rating. In the first section, we explain the underlying diversity concept. At the same time, we illustrate the connection between the differentiation of various types of HEIs, in particular between universities and universities of applied sciences, and the diversity of students using the German higher education system as an example. In the second section, we present a first option of recording institutional diversity developed in the European context: the so called "U-Map classification"[3] of European HEIs, an example of the classification approach, in which HEIs are classified in different classes and/or types, following certain criteria. The third section introduces the Australian model which has been in use for more than a decade in Australia but has rarely been adopted in Europe. It provides a second and well-proven option of recording differences between HEIs. This option uses a performance-indicator based statistical balancing method which takes the composition of the student body into consideration. Based on the results, the HEIs are to be supported (financially) in order to be able to react adequately to the specific needs of their students, so that the latters' success in studying is made possible regardless of

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1 Cf., for example, a dossier of the Heinrich Boell Foundation (2011), providing contributions from various scientific and socio-political points of view.

2 This essay is based upon a previously prepared and published text (Krempkow & Kamm, 2011), which has been revised and updated.

3 "U" is an abbreviation for "university". In the German context "U" also stands for universities of applied sciences. For further information see the project homepage: www.u-map.eu.

their individual qualifications (DETYA 1998). Weighting the pros and cons of the two presented approaches, we will discuss in section four if it might be worthwhile adapting the Australian approach to the German system.

1. Diversity in the German higher education system

The alternative approaches of describing the variety of HEIs and the subsequent fund distribution procedures, which are discussed in this article, are both based on the assumption that modern higher education systems need to fulfil a multitude of tasks for different target groups. For that reason, different types of institutions have been developed in higher education systems. Higher education systems are characterised by a more or less extensive institutional diversity.

Institutional and/or external diversity in a higher education system is defined to be the degree of variance among the HEIs at a specific point in time, as opposed to internal diversity (van Vught 1996, p. 44; van Vught, Kaiser, File, Gaethgens, Peter, & Westerheijden, 2010, p. 11).[4] Diversity may be achieved by the process of differentiation and/or diversification (Goedegebuure Meek, Kivinen, & Rinne 1996, p. 5). Diversity of higher education institutions may refer to such structural aspects as the organisational structure, to such procedural aspects as the execution of teaching and research, but also to differences in the organisational culture and the orientation towards (differently) defined target groups (van Vught 2009, p. 1). These aspects of diversity refer to a horizontal diversity among HEIs, the point of reference being different objectives of the institutions and their implementation. At the same time, there may be differences among the higher education institutions in terms of performance and reputation. This can be defined as vertical diversity or differentiation (Teichler 2005, p. 65, p. 99), which, for example, has most recently been promoted in Germany by the Excellence Initiative (Neidhardt 2010, p. 57). The advantages of an institutionally diversified higher education system can be summarised as follows:

> "Diversified higher education systems are believed to produce higher levels of client-orientation (both regarding the needs of students and of the labour market), social mobility, effectiveness, flexibility, innovativeness, and stability" (van Vught et al. 2010, p. 12; also cf. van Vught, 1996).

Institutional diversity in a higher education system is, at least implicitly, expected to take an integrative effect at the student level. It is concluded that, with a variety of different types of HEIs, a system will be able to meet the specific needs of various groups of students, thus to take effect on the diversity of the student body (van Vught 2009; pp. 4-6). Against this backdrop, we will illustrate some connections between the type of HEI and the differences in the composition of the student body.

1.1 The differentiation between universities and universities of applied sciences in Germany

The politically supported differentiation between universities and universities of applied sciences may be considered a central development towards institutional diversity

[4] As to an overview of the development of differentiation theory argumentation and further differentiation, also including the diversity between higher education systems or the difference between (university) internal and external points of view, cf. van Vught (2009).

in Germany. In the late 1960s, we witnessed the introduction of the universities of applied sciences, another type of HEI, supplementing the general universities. This introduction was meant to help mastering the student numbers, which increased in the wake of the transformation of the higher education system into a mass system. It was intended to establish the teaching- and application-oriented universities of applied sciences, the major objective of which was to provide the students with a job-oriented academic training, as opposed to the research- and teaching-oriented universities. As clearly less research work was done at the universities of applied sciences, their introduction resulted in a horizontal differentiation of university types in Germany. Academies of art and of music as well as of education are further types of HEIs in Germany, which are, however, negligible due to their small sizes. Universities of technology, which had been a separate type of university, subordinate to the general universities until the end of the 19th century, have by now been included in the circle of universities, as have the polytechnic universities established in the 1970ies (Enders, 2010).

Ever since the end of 1980ies, however, we have witnessed an opposite trend towards less differentiation between universities and universities of applied sciences. At the universities, the students increasingly demand the courses to be more oriented towards practice. The universities of applied sciences have gained research skills – initially only in the field of application-oriented research, but by now clearly going beyond that field. With the conversion of the course programmes to modular courses, the two types of institutions have become more similar in the field of teaching (ibid.; 446-449). Additionally, universities of applied sciences currently gain competence in the field of promoting young scientists, particularly by cooperating with universities in awarding doctorates. Due to these developments, other criteria of differentiation between the different types of HEIs gain in importance. The differentiation between universities and universities of applied sciences is, for example, supplemented by the differentiation between the bachelor, master and doctorate degrees[5] or the vertical differentiation between the universities who successfully applied with their future concepts within the Excellence Initiative on the one hand and other universities as well as universities of applied sciences on the other hand (ibid.; Wissenschaftsrat, 2010, pp. 22-24).

In the recent past additional changes have occurred in the institutional environment of the German higher education system. The academies of cooperative education, which offer a combination of vocational training and theoretical studies, are traditionally not part of the higher education system in Germany. Yet academies of cooperative education are institutions which may be considered to be potential competitors of the established university types in Germany (Krempkow & Pastohr, 2009). The eight academies of cooperative education in Baden-Wurttemberg were united in 2009 and – as the Baden-Wurttemberg Cooperative State University (Duale Hochschule Baden-Württemberg, DHBW) – institutionally upgraded and established as a university (BMBF, 2010, p. 66).

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5 Cf. e.g. the UAS7 association of seven German universities of applied sciences welcoming the recommendation of the German Science Council (Wissenschaftsrat, 2010) to support a further differentiation of the higher education system and to grant some universities of applied sciences the right to award doctorates.

1.2 Diversity of the students in accordance with the university types

Institutional diversity is accompanied by differences in the composition of the student body, particularly in terms of teaching aspects. This may be illustrated by the example of the 19th social survey of the German National Association for Student Affairs (Deutsches Studentenwerk) conducted in the 2009 summer semester (in the following referred to as BMBF 2010). According to that survey in 2009, 96 per cent of the students at universities had a general university entrance qualification (Abitur), at universities of applied sciences the figure amounted to only 53 per cent. At the universities of applied sciences the ratio of students with an accomplished vocational training was 45 per cent, clearly above the ratio of 13 per cent of university students with an accomplished vocational training, (ibid, p. 71). On the average, the parents of the university students were higher qualified than the parents of the university of applied sciences students. 56 per cent of the first-degree students at a university had at least one parent with a university degree, which applied to only 40 per cent of the first-degree students at a university of applied sciences. These figures are confirmed by the student survey, which has regularly been conducted by the AG Hochschulforschung research working group of Konstanz University at universities and universities of applied sciences in Germany since the winter semester of 1982/83. According to that study, in 2010 58 per cent of the students studying at universities had at least one parent with a university degree compared to 40 per cent at universities of applied sciences (Multrus, Ramm, & Bargel, 2011, p. 1).

In the social survey, the social background is additionally structured in four groups under consideration of the parent with the highest occupational position using the (lacking) university degree as control criterion. This provides the basis for the groups of social origin: lower, middle, upper middle and upper (BMBF, 2010, pp. 118-130, 563-565). Here again, university students are of higher social origin, on the average, than university of applied sciences students. At the universities, 41 per cent come from the "upper" group of social origin, 23 per cent from the "upper middle" group, 30 per cent from the "middle" group and 13 per cent from the "lower" group. At the universities of applied sciences 30 per cent of the students come from the "middle" group of social origin (the largest group), the other groups have a strength of 25 per cent ("upper" and "upper middle") and 20 per cent ("lower") (ibid, p. 131).

These data allow us to summarise as follows: The universities of applied sciences confirm their reputation as educational institutions that are of particular interest for those who are interested in studying, yet come from social strata in which there is not much contact with the university (ibid, p. 130). Accordingly universities of applied sciences rather admit students who cannot be considered members of the classical target group of a system focusing on the support of elites, as it was strongly influencing Germany up to the 1960ies.[6]

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[6] In addition to the differences in the composition of the student community between the two major types of HEIs in Germany, there are general distinctions superimposing those differences, such as the distinction between students in East and West Germany, between female and male students, between students with and students without children, and/or students with and students without a migration background (cf. BMBF, 2010).

A central question results from the systematic differences between the compositions of the student communities of the different types of HEIs: Do those institutions admitting specific groups of students who are not considered to be the future academic elite face a (financial) disadvantage due to their admission practice? We may assume that for HEIs, diversity in this context is actually of interest only if the differences in the student body, which – based on initial empirical studies – may be assumed to be reflected in differences in the graduate ratios (Kamm & Krempkow, 2010, p. 75), are not negatively (financially) sanctioned.

2. The European classification for recording institutional differences between higher education institutions

In various countries, first of all in the US, there have – for some time now – existed approaches of how to record universities and describe them in a systematic and criteria-oriented way in terms of their institutional differences.[7] Since 2004, the CEIHE or U-Map project for developing a classification of HEIs in Europe has been conducted at the European level. The objective of this project is to improve the knowledge about the diversity – which in this context means the degree of variance between HEIs at a certain point in time – in the European university sector and to promote its positive perception. Based on this foundation, the European HEIs, which are growing together, are able to successfully bring to bear their strengths in the international competition between HEIs and thus higher education systems (cf. van Vught et al., 2010).

By means of classifications, empirical cases may be systematically arranged by one or by several criteria (cf. ibid.). The classification of HEIs is meant to increase the transparency in a higher education system by emphasizing common features of and differences between the institutions (cf. Bartelse & van Vught, 2009, p. 59). The classification of U-Map is based on the six dimensions teaching and learning, student profile, knowledge exchange, international orientation, research involvement and regional engagement. Each dimension includes several indicators. By applying these, every participating European university can be characterised.[8] Their profiles can be compared as a whole, in the six dimensions or with reference to individual indicators. The European classification has been developed in a collective process, in which various stakeholder groups of the higher education system were represented in addition to the scientific project team (cf. ibid., p. 58-59).[9]

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7 In the US, the Carnegie Classification has been in place since the 1970s. It is a classification of HEIs, which has been permanently adapted to new findings and developments. One central objective has been the capability to record the institutional diversity existing in the American higher education system (Carnegie Foundation, 2011; Wissenschaftsrat, 2010, pp. 116-119).

8 Cf. the project homepage www.u-map.eu.

9 For Germany the U-Map classification did not apply until 2013. But German institutions take part in the U-Multirank project, which shares the same conceptual model. U-Map and U-Multirank are complementary instruments for mapping diversity: horizontal diversity in the U-Map classification and vertical diversity in the U-Multirank ranking (cf. CHEPRA Network, 2011, pp. 45-46). Furthermore, in Australia exists an initiative to im-

By specifically identifying the differences between European HEIs, it is, on the one hand, possible to increase transparency and the knowledge about the European HEIs (cf. ibid.). On the other hand, it is not possible to prevent such a comparing description of HEIs from being used as a basis for rankings and hierarchical comparisons and the risks that might follow from rankings of HEIs. Even if such approaches are explicitly rejected (cf. ibid., p. 67), on the one hand users may – from the data listed – deduct a hierarchical ranking along the relevant indicators or dimensions. On the other hand, we note the risk that the HEIs themselves might be induced by the explicit presentation of their strengths and weaknesses to carry out changes that actually oppose the desired and displayed diversity.

By the description of institutional profiles and the (sometimes only implicit) formation of performance classes, the individual institutions may be induced "to specifically develop themselves into" a category. The adjustment to that category that at the relevant moment has the strongest reputation may thus become the strategic objective of the university development. The display of diversity, which was the original idea of classification, may thus turn into a production of similarities (cf. Wissenschaftsrat, 2010, p. 116).

For many universities, currently the focus is on the orientation towards the model of the research university. The latter is particularly successful in the known global rankings due to the used criteria and their weighting (cf. Wende & Westerheijden, 2009, p. 71) and it has the best reputation in the academic community. This is supported by performance-based incentive and funding systems (acronym PBF), which often rate research success higher than the completion of teaching tasks (cf. König, 2011). The question is whether in the future a research weakness, identified by a multidimensional ranking, may be balanced in the international perception by an explicit strength in another area, such as teaching. So, transparent classification involves the risk of less differentiation and approximation of the majority of HEIs to the research university type. Alternatively and in contrast to the sole emphasis on research, a classification may alternatively be developed on the basis of various rating dimensions, as is shown by the feasibility study conducted under the U-Multirank Project, based upon the results of the U-Map Classification (cf. CHEPRA Network, 2011, p. 45). The ranking does, however, not only refer to comparisons within the classes in the U-Map concept, but it is also meant to be applied to different types of HEIs.[10]

In Germany, the fact that less differentiation on the institutional level may counteract the increase of diversity in the higher education institutions is taken into consideration in the requirements concerning the development of the higher education system, too (cf. Zechlin, 2014). In the Science Council's recommendations on the differentiation of HEIs in Germany dated November 2010, the Council, for example, supports the idea of developing new types of HEIs, supplementing the typical German types– which are the universities and the universities of applied sciences, in particular.

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plement university profiles similar to the U-Map classification (cf. Mahat, Coates, Edwards, Goedegebuure, Brugge, & Vught, 2014).

10 Cf. e.g. CHE 2011, p. 2; CHE 2012. The first ranking was published in 2014 (cf. URL: www.multirank.eu/news/article/u-map-goes-live/), after the submission of this article.

The new types are to reflect a high variety of institutional objectives, organisation types and tasks (cf. Wissenschaftsrat, 2010, pp. 66-67). This does, however, hold a risk: In the long run, some groups of HEI types may thin out dramatically, if the functional differentiation between the institutions is highly developed. Consequently, the orientation function of the differentiation might be lost on the one hand, while HEI group-specific statistical evaluations might be more difficult to be conducted (cf, Krempkow, Vissering, Wilke, & Bischof, 2010, p. 58). Below, we present an approach that will avoid – or might at least reduce – possible (particularly financial) disadvantages resulting from an increase in diversity for existing as well as for new types of HEIs.

3. The added-value approach: Adjusted indicators for different initial conditions in accordance with the Australian model

As shown, classifications are not immediately linked to the allocation of funds. Yet they form a potential foundation of indicator-based and other performance-oriented procedures. They may include a multitude of different indicators for various university performance areas and be applied as a basis for separating the allocation of funds in so-called multi-circle models via the use of the developed "performance" classes. Various indicators of classifications are also included in German PBF systems[11]. So far, however, the different initial conditions of HEIs in institutionally differentiated systems have normally not been considered in the calculation of performance indicators.[12]

The Australian model of adjusted indicators, which was introduced in 1998 for the performance-oriented allocation of funds from the Learning and Teaching Performance Fund and has been hardly known in Germany so far, provides a different picture. The indicators used in this model include the share of non-native (English) speakers, the social-economic status, part-time and full-time students ("type of enrolment"), gender and age of the students, population density in their areas of origin,

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11 For a few years, there has been a PBF system in almost every German Bundesland (cf. König, 2011). Yet this PBF distributes potentially quite different shares of the overall budget, ranging according to König (2011) from two per cent in Saxony to 25 per cent in Bavaria. And in other Bundesländer, the share is clearly higher, too (Baden-Wurttemberg and North Rhine Westfalia: 20 per cent, several others 15 per cent). In the meantime, that share has been clearly increased again in some of these Bundesländer and in others, too (Berlin, e.g.: 30 per cent).

12 Finland, offering boni for schools in socially underpriviledged areas, and the UK with "special funding for 'high risk' students with a statistically high propensity to drop out" (Sörlin 2007, p. 422) are exceptions. In the UK, some years ago, they also used the term of measures taken for "non-traditional students". The most recent Berlin system of the performance-based university funding is an exception in the German higher education system. Here diversity is given explicit consideration, for example by crediting higher education institutions an additional amount of € 10,000 for each new student having a migration background or coming from applicant groups without "Abitur" (the German university entry qualification), who are qualified due to the trade they have learnt (Senatsverwaltung für Bildung, Wissenschaft und Forschung Berlin, 2011).

subject cultures, type of course, required admission qualifications, and specifically for Australia the indigenous Australian status. For the calculation of the performance indicators, their relevant specific markedness in the evaluated institutions is taken into consideration (cf. DETYA, 1998, p. 70). The following considerations led up to the development of the model: "The simplistic use of performance indicators can produce misleading impressions of institutional performance. Institutions have diverse missions, backgrounds, course offerings and students" (ibid., pp. 70-71). For that reason, a method was developed which was to balance the effects taken by various factors. In order to analyse the effect taken by potential influential factors, first regression analyses were conducted, and then only those influential factors the effects of which were proven[13], were considered for the adjustment.[14] Essentially the approach adopted in the Australian model for indicator adjustment is a comparison of the institutional performance against the background of a set of national values concerning the composition of the student body (cf. DETYA, 1998). This approach may potentially be transferred to German HEIs, too, if the relevant data are available (for the transferability to a German Federal State cf. Krempkow, & Kamm, 2012). Under consideration of the composition of the student body, first the question is to be answered whether there are palpable differences between German HEIs, before the indicator adjustment is demonstrated by means of a calculation example.

The potential transferability across the institutional diversity of HEIs in Germany may be illustrated by means of selected features of the composition of the student body.[15] These features have been ascertained by means of secondary data analyses of existing data sets (cf. Bargel, Multrus, & Ramm, 2011; BMBF 2009). The share of stu-

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13 These influencing factors include age, gender, non-English speaking background (NESB) status, Indigenous Australian status, socio-economic status, rural status, isolated status, broad field of study, level of course, basis of admission and type of enrolment (cf. DETYA, 1998, p. 70).

14 In France, CÉREQ (2009) conducted regression analyses and a simulation of a similar PBF procedure. A similar regression analysis also was conducted at higher education institutions in Germany, cf. Kamm, & Krempkow (2010). The influencing factors were gender, broad field of study, socio-economic status, and type of enrolment (cf. ibid; Kamm, & Krempkow, 2013). In an adopted version of this paper the authors exemplarily transferred a simplified version of the Australian model to the universities of one German Federal State (Krempkow & Kamm, 2012).

15 In Germany, there exists a long-time discussion about the influence of the social and educational background to the results of the PISA surveys and similar studies. A lot of publications show a strong relationship between both aspects – also under the control of other influencing factors (cf. e.g. OECD, 2013, p. 40; Lehmann & Lenkeit, 2008, p. 42). The findings lead to a calculation of adjusted mean performance (after taking account of socio-economic status). The addressed question is almost the same as in our article: What would be the average performance if all students had the same socio-economic status? A figure in the OECD (2013, p. 42) publication shows, that some countries perform much better in the adjusted performance, e.g. Portugal, Turkey and Viet Nam.

dents whose parents are no university graduates,[16] a frequently used feature identifying the social (or, to put it precisely, the educational) origin, varies in the available data of the universities alone[17] from 65 per cent, approx., (Kassel, Duisburg-Essen, Oldenburg, Bochum) to 40 per cent, approx. (Freiburg, TU Berlin, LMU Munich, Leipzig). Of course this partly depends on the subject combinations. But it probably depends on other factors, too (such as the location and/or the recruiting potential), for even within the same subject, there are differences of a similar dimension. In sociology, e.g., the share of students whose parents are no university graduates ranges from 70 per cent, approx. (Kassel, Duisburg-Essen, Rostock, Bochum) to about 40 per cent (Freiburg, and, with some margin, TU Berlin, Potsdam, Leipzig). It is probably no coincidence that the locations are almost the same in each case.

The differences in the share of part-time students, which is more or less equivalent to the "type of enrolment" indicator in Australia, are also comparatively large. As for the universities, their share in the available data ranges from about 15 per cent (Freiburg and, with some margin, TU Dresden, Karlsruhe) to 35 per cent (Duisburg-Essen, Frankfurt/Main, Hamburg). For sociology alone the shares range from 19 per cent (TU Dresden, followed by 27 per cent at the TU Berlin and 30 per cent in Freiburg) to 60 per cent (Frankfurt/Main with only a low margin to Hamburg and a larger margin to the 40 per cent of Bochum). Again it is a striking feature that – from the cross-subject point of view as well as from the subject-specific point of view – most of the locations are the same (some such as Karlsruhe do not offer sociology). The comparison could be continued for other subjects in a survey that is specifically focused on that point. In general, there is definitely some diversity in terms of the composition of the student body at German HEIs. Against this background, the transfer of the Australian model to Germany might be worthwhile considering.

In the following the four essential steps of the calculation method within the model are exemplarily explained by means of two fictitious HEIs (following the calculation example in DETYA (1998, p. 71).[18] As illustrated in Table 1, institution 1 has a small share of students with low socio-economic background status (20 per cent), institution 2, in contrast, has a high share (70 per cent). Table 2 shows a higher uncor-

16 The share of students whose parents are no university graduates was calculated by means of the variable "educational degree of the father combined with vocational qualification" in Bargel et al. (2011), the above-mentioned locations remain almost completely the same if the highest educational degree of both parents is used. The calculation was based upon the last four waves of the survey conducted at 17 representative universities (and ten universities of applied sciences) throughout the Federal Republic of Germany. At 14 of these university locations, studies in sociology are offered. Here, clearly more than 20 interviewed students answered the questions about their educational origin (exception: Duisburg-Essen: 18 students; yet this location was included only in the most recent surveys.). Information about their educational origin was provided for 33175 students, in sociology for 665 students. Very few of the interviewed students (only ten of the sociology students) provided no relevant information.

17 If the universities of applied sciences were included, the range would be even wider.

18 The example is not based on real HEIs but the illustration of the basic function of the approach. Institution 1 and institution 2 in this calculation example have an equal size.

rected success ratio for institution 1 and illustrates the expectation that subgroups of students with low socio-economic background have lower success ratios. In Table 3, the calculation of the expected success ratio of both institutions is presented. Thereby, the different initial conditions are taken into consideration. Under consideration of the national set of performance data and the composition of the student body institution 1 should have a success ratio of 85% which would exceed the achieved 82%. Therefore, in the fourth step – shown in Table 4 – the difference of crude and expected success ratio ("adjusted performance") is calculated. The adjusted performance is also considered as "added value". For HEIs with disadvantageous initial conditions the adjusted performance represents the value that can be added to the expected value.

Table 1: Initial conditions
Share of "low socio-economic background status" (SEB) versus "other SEB"

	Institution 1	Institution 2	Total
Low SEB	20 per cent	70 per cent	45 per cent
Other SEB	80 per cent	30 per cent	55 per cent

Table 2: Success ratio
as a crude performance indicator (perf.) by institutions and subgroups

	Institution 1	Institution 2	Total
Low SEB	70 per cent	75 per cent	74 per cent
Other SEB	85 per cent	95 per cent	88 per cent
Total	82 per cent	81 per cent	81.5 per cent

Table 3. Expected success ratio (Exp. SR) based on the example of institution 1

	lowSEBshare1	* lowSEBperf.	+ othSEBshare1	* othSEBperf.	
Exp.SR =	20 %	74 %	80 %	88 %	= 85 %

Table 4. Adjusted performance indicator as the difference crude – expected success ratio

	Institution 1	Institution 2	Total
Total exp. SR	85 per cent	78 per cent	81.5 per cent
Diff. cr. – Exp. SR = adj. perf.	82 - 85 = - 3 per cent	81 - 78 = + 3 per cent	0 per cent

The "adjusted performance" values resulting from the presented calculation method indicate what the results would be like for the institutions if only the "low SEB" shares were taken into consideration as influential factor for the adjustment (cf. Table 4). In this case, the ratio changes as compared to the ratio resulting if the SEB shares were not considered: As for institution 1, having clearly less low SEB students, there is a negative value (-3) due to the higher expected success ratio. As for institution 2 there is a positive value (+3) due to the resulting lower expected success ratio.

The calculation example shows that even for large differences in the SEB share, the values of the adjusted performance remain in the single-digit percentage area. As it had been intended to adjust the existing performance rating and incentive systems and not to create new incentives for changing the composition of the student body, short-term changes in the composition of the student body would take less effect than changes of the success ratios, as has been intended. Major changes due to a different composition of the student body might be possible as a result of adjustment only when locations simultaneously showed clearly less favourable initial conditions in several influential factors relevant for adjustment, as compared to the average in the country.

In addition to the SEB status, eleven influential factors were calculated in the original more comprehensive Australian model. Later, the calculation was done with a simplified model with four influential factors, bringing about almost identical results.[19] The calculations carried out by way of example here, were conducted for a total of 43 HEIs in Australia. Some institutions that showed clearly higher success ratios than expected despite less favourable initial conditions were allocated clearly higher-than-average funds. Several institutions suffered minor losses, for many institutions there were hardly any differences (cf. DETYA, 1998; Krempkow, 2010).

The Australian model of adjusted indicators was subjected to an external review in 2005. While the suitability of some individual performance indicators was sharply criticised and their advancement was called for, the overall concept indeed obtained a positive assessment:

> "Access Economics found that the overall concept (…) attempting to create a 'level playing field' by removing differences in university performance due to exogenous factors (such as the age and gender mix of students) is a sensible and fair approach. The set of exogenous variables used is also sensible and covers a good range of social and demographic factors that are beyond the control of the institutions. [It] has also been careful to exclude any factors that are within the control of a university" (Access Economics, 2005, p. 4).[20]

Another analysis of the model resulted in the conclusion that even if the distributed amounts are comparatively small, the model – with its indicators and their relative weights – still has the potential of developing strong incentives for the institutions' policy, inter alia, due to the public discussion of the results of the performance comparisons (Harris, 2007, p. 69)

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19 Some time ago, another advanced version of the model was initiated, the relevant results were not yet known when this article was submitted.

20 The question of influencing factors which have to be incorporated in comparisons of outcomes in studies on quality and output/outcome of teaching and learning has a long tradition. The report of Access Economic represents the main features of a typical meta-analyses in this field. It brings forward the argument that only "external" influences independent of teaching and learning should be accounted for in comparisons of outcomes. At the same time conditions that can be influenced by actors should not be regarded as potentially distorting "bias-variables" and should therefore not be incorporated in the indicator adjustment calculation. The multitude of studies cannot be addressed in detail in this article (for a detailed discussion of this topic cf. Krempkow, 2007, pp. 145-146).

4. Discussion and prospects: Is it worthwhile to adapt the Australian model to Germany?

This article is based on the argumentation that there is a connection between systems for recording and rating university performance in the research and teaching areas on the one hand and institutional diversity and the degree of variety in the student body composition on the other. Although classifications of HEIs are rather easy to understand, the resulting rankings do not counter the problem that indicators originally not designed for that purpose will be considered directly in the PBF. From the individual institution's point of view, it appears to be rational to follow the example of successful institutions in order to permanently secure their existence. As argued in section 1, this might firstly result in a reduction of the institutional diversity if all HEIs strive for being accepted in the particularly attractive best performer class. This may also take a problematic effect on the variety in the student body if everywhere the research orientation took priority over the orientation towards different student target groups. Secondly, the development might yet turn towards an increase in the number of institution types to be considered. This would have to be expected if further characteristics of the students were considered in the performance rating and individual institutions were induced to specialise on certain groups of students and to adjust the offered teaching contents and organisation to these students' demands. An interesting group might, for example, be the group of the non-traditional students, who are considered in the performance rating in the UK.[21] As mentioned above, this might bring about the problem of a reduction in the orientation function of HEIs.

As yet, there is no accepted and practicable solution for specifically dealing with the quite different initial conditions of HEIs in Germany. In this essay, the Australian model has been introduced. It avoids the potential problems of classification formation by referring the performance of each institution to its initial conditions without having to group them in advance.[22] The adjustment would include not only a higher degree of transparency, but also – via the actually provided performance – the "added value" of higher education in the performance rating and the PBF, which is provided if HEIs with a student body the composition of which is unfavourable (for high success rates) have success rates that are above the expected values.[23] According

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21 Maybe, here is a potential risk of "gaming by numbers": If the necessary data consists of soft information (e.g. parents school degrees etc.), an incentive for university administrations to inflate the numbers of this group of students might be given. In the U.K. so far no experience of misuse has been reported that we have heard of. Nevertheless, for avoiding potential misuse, the indicator adjustment should combine multiple aspects (as is done in the Australian model).

22 The German PBF does usually distribute money only between universities on the one hand and universities of applied sciences on the other hand (due to different research shares). Because of it by adapting an Australian scheme this 2-tier-system would not automatically merge into one.

23 Of course it is not possible to solve other problems that are immanent to the performance rating by indicators just by means of indicator adjustment. This, in particular, refers to the possible unintended effects of PBF systems with few indicators that may be

to initial empirical analyses, this might, for example, be achieved by means of an improved quality of studies and a promotion of competence (cf. the assumption based on empirical findings in Krempkow et al., 2010, p. 57, as well as significant effects of the quality of studies and the promotion of competence in Kamm & Krempkow, 2010, p. 76). The improvement of the quality of studies and the promotion of competence have been important objectives of the Bologna process, and these objectives have been assigned a higher priority than before – in regard to political attention as well as funding – by the most recent Bologna summits of the Federal Government and the BMBF promotion initiatives (such as the 2 billion Euro spent to improve the quality of teaching and studies under the Higher Education Pact 2020). So, an adaptation of the Australian model of indicator adjustment in performance rating in Germany and in the PBF of German Federal States (Laender) might indeed provide an effective flanking support for achieving these objectives. This would also allow for taking the different initial conditions of the HEIs into consideration – as opposed to the overarching promotion of the diversity efforts taken by HEIs in the Berlin PBF model.

The aspects that have been mentioned here refer to obvious risks and opportunities. Some resulting questions provide principle prospects: Will it be possible to design a generally accepted grid pattern for the grouping of HEIs or to achieve its acceptance by means of an understandable preparation and illustration of the relevant statistical calculation methods? And (how) will it be possible to combine the classification approach and the added-value approach in such a way as to take a positive effect on the different variants of university profiles?

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easily manipulated, are – to a high degree – oriented towards quantities and do, accordingly, offer little incentive for promoting or at least securing quality (cf. for more detail Krempkow, 2007). For processing this problem, either an accordingly stronger quality assurance or indicators that are (supposed) to record the quality of the provided performance to a higher extent were introduced in nations with a longer PBF experience. For the latter objective, not only the Australian experience, but also the Swiss indicator developments based on graduate studies may be helpful for continuing the discussion (as to a relevant overview, cf. Krempkow, 2009, p. 49). As to some subjects with examina that are the same throughout a Land or even the Federal Republic, examination marks may even be worthwhile to be discussed. In the long run, the recording of the skills of university graduates may be discussed as a tool that offers the potential of recording quality in a better way (cf. the international AHELO project).

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