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Performance-based funding of public research in the German tertiary education sector

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1 Introduction

Since the early 1990s the German states have been developing procedures for funding institutions of higher education (HEIs) with an increasing orientation on performance using indicator-based steering. In the German federal state, it is the regional states (the *Länder*) which have most jurisprudence in the higher education sector. The sixteen states, therefore, determine autonomously the design and implementation of their procedures to fund public higher education. This has led to a diversity of models, which demonstrate both similarities and clear differences.

This report will provide an overview of the procedures in use in the individual states. It is a synopsis which has been drawn-up within the framework of the project “Performance-based funding for public research in tertiary education institutions” from the OECD working group “Research Institutions and Human Resources” (RIHR).¹ The aim of the project is inter alia to give an overview of the status quo and development of performance-based procedures for funding public research in the tertiary education sector within the OECD member countries. The synopsis presents the German situation. It focuses – in line with the project design – on one component of state funding of HEIs, namely on institutional funding of research on the basis of performance-based indicators. The aim is to analyse similarities and differences in the sense of typologies which might provide fruitful impulses for international comparisons.

The project is limited to HEIs in the tertiary education sector, i.e. universities, legally equivalent institutions of higher education and universities of applied science (*Fachhochschulen*)². Research activities which take place outside of universities and other HEIs, and play a significant role in the research landscape in Germany, are not included in the analysis as stipulated by the research design.³

At this point, we would also like to note a further characteristic of the German higher education system: institutional funding does not distinguish between the areas of research and teaching. That means that all procedures for performance-based funding encompass both teaching and research. This characteristic leads to a number of problems for responses to the questions in the survey, which will be dealt with in the respective sections below.

¹ The working group RIHR is a subgroup of the OECD Committee for Scientific and Technological Policy, CSTP.

² The first *Fachhochschulen* were founded in Germany at the end of the 1960s. Education in these institutions of higher education has a strong orientation towards occupational requirements. According to provisory data from the German Federal Office for Statistics, around 30% of all German students study in *Fachhochschulen*.

³ Important institutions of research in Germany, which are not directly linked to universities or other HEIs, are the Max-Planck-Society, the Fraunhofer-Society, the Leibniz Association and the Helmholtz Association.

This synopsis is based on a survey of the science ministries of 16 German states, which was carried out in March 2010. The English-language questionnaire entitled “Questionnaire on performance-based funding for public research in tertiary education institutions”, which is in the Appendix of this report, was used to collect responses. This questionnaire was sent out by the Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany (KMK) to the respective contact persons in state ministries. The responses were sent by the KMK to the Higher Education Information System (HIS), which analysed the responses and produced this synopsis.

On the date of the deadline, 12 of the 16 states had submitted completed questionnaires.⁴ Three of these states do not implement performance-based procedures for research funding, according to their response.⁵ The following analysis is, therefore, based on responses from the following nine states: Baden-Württemberg, Bavaria, Berlin, Brandenburg, Hamburg, Hesse, Lower Saxony, North Rhine-Westphalia and Rhineland-Palatinate.

The synopsis was drawn-up solely on the basis of the submissions by the nine *Länder*. States, which did not participate in the survey, could not be included in the analysis due to the tight project schedule. Further research was only possible to a very limited degree. Where HIS publications in this area exist, this information was included to provide a wider context for discussions on the responses of the *Länder*.

The individual sections are consequently organised as follows: a short summary is provided at the start of a topic area, which presents the main results and provides a concise orientation. This is followed by a presentation of the responses of the *Länder* to the survey. Finally, these responses are set within the context of further studies in the topic area.

This synopsis is submitted to the OECD in cooperation with the president of the committee for higher education of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany.

⁴ Participating states were: Baden-Württemberg, Bavaria, Berlin, Brandenburg, Hamburg, Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, Saarland, Schleswig-Holstein and Thuringia.

⁵ Saarland, Schleswig-Holstein and Thuringia.

2 Performance-based funding models for public research in Germany

2.1 Time of introduction

Summary

The procedures for performance-based funding allocation, which are currently implemented in the observed states, were introduced between the mid-1990s and now. The funding model in Rhineland-Palatinate already existed in 1994 (materials and capital expenditure) and 1998 (staff costs). It is, therefore, the “oldest serving” model, which is still being practiced today. On the other side of the scale, we have Berlin: this new performance-based funding system starts this spring.⁶ Allocations will, however, not be determined by this new mechanism until 2012. The introduction of the funding procedures currently in use in almost half of the states, which took part in this survey, occurred between 2003 and 2006. In many cases earlier models had been implemented in the past. The time between the first considerations of a funding model and its proper implementation generally ranges between one and two years.

An overview of the date of model implementation is presented in Table 1.

Table 1 Year of introduction for current funding model

State	Year of introduction
Rhineland-Palatinate	1994/1998
Bavaria	1999
Baden-Württemberg	2000
Hesse	2003
Brandenburg	2004
Hamburg	2004/2005
Lower Saxony	2006
North Rhine-Westphalia	1998
Berlin	2010/2012

Survey results

- Four states introduced their respective current funding mechanisms around the turn of the millennium or earlier. In line with their relatively long existence, these models tend to have been extensively developed further (see also section 2.6). Two parallel systems were established in Rhineland-Palatinate: materials and capital expenditure

⁶ A previous model has been used in Berlin since 2002. The share of funding, which is allocated according to performance criteria, is lower than for the new model (30 % across all activities; the real effect of redistribution is less than 0,5 % of the budget).

for research and teaching have been allocated on the basis of indicators since 1994. A complementary model for staff costs were introduced in 1998. Performance-based models were implemented in North Rhine-Westphalia, Bavaria and Baden-Württemberg in the years 1998, 1999 and 2000.

- In almost half of the observed states (Brandenburg, Hamburg, Hesse and Lower Saxony), the introduction occurred between the years 2003 and 2006.
- Berlin is, in a sense, a special case: In signing the higher education contracts for the years 2010 through 2013, the HEIs in Berlin agreed to a new system of performance-based funding. This system is being prepared for 2010 and grants will be allocated for the first time using the new performance criteria in 2012.
- There was a duration of around two years in most of the observed states between considerations and debates on the introduction of the current funding models and their actual implementation. This is the case for Baden-Württemberg, Brandenburg, Hesse and Lower Saxony. In other states one year (Bavaria, Berlin) or less (North Rhine-Westphalia) was necessary.

Context

Many states already implemented previous models. In Hamburg, for instance, an indicator-based model was used in 2002 and 2003; the follow-up model was introduced in 2004 and used for allocative decisions in 2005.⁷ In Lower Saxony there has been a procedure for indicator-based funding since 2000 for the universities of applied science (*Fachhochschulen*); this was extended to the universities in 2006.⁸ In North Rhine-Westphalia allocations for student assistants, digital literature and equipment have been distributed on the basis of indicators since 1994, although the current system was introduced in 2006. The budget components made up around 8.4% of the total grant to universities and 5.9% for universities of applied science.⁹ In Brandenburg and Hesse, there are no known previous models. Hesse revised its first model, introduced in 2003, two years after introduction. A previous model in Berlin was first introduced in 2002.¹⁰

2.2 Objectives

Summary

The general aim, in conjunction with the transition from a primarily discretionary-incrementalist practice for grant allocations to an increasingly performance-based allocation using indicator-models and target agreements, is to strengthen the autonomy

⁷ Cf. Leszczensky/Orr 2004, pp. 25-28.

⁸ Cf. Leszczensky/Orr 2004, pp. 31-34.

⁹ Ibid, pp.34-35.

¹⁰ Ibid, pp. 18-21.

and institutional responsibility of HEIs, especially in relation to budget management. The observed *Länder* also named the following additional reasons for the decision to introduce performance-based funding: establishment of competitive structures, introduction of performance incentives, increasing transparency and objectivity of budget allocations, predictability for the HEIs and accountability on the efficient use of public money.

Survey results

The expectations which are connected to the implementation of performance-based funding models by the observed states are documented briefly below. In general, the respondents did not provide a prioritisation of the named objectives in the survey.

- Particularly frequent was the objective of introducing competition between the HEIs of a state through the implementation of performance-based funding mechanisms, which in turn reward HEIs' success in following policy goals. This should assure the optimal use of state grants.
- At the same time, the competitive structures and a focus of grant allocation procedures on output should lead to clear incentives for an improvement in performance and an increase in quality between competing HEIs.
- A major objective, cited by many of the states, is to achieve budget allocations which are transparent, easy to understand and, as far as possible, based on objective criteria.
- Additionally, the efficient use of public monies should be documented by the use of the procedures.
- An improvement in predictability is expected for both the science ministries and the HEIs through transparent, formula-based models.
- In connection with the funding of research, most of the states give as motivation for performance-based models an incentive for a more intensive acquisition of third party funding and an increase in the number of doctoral and post-doctoral (*Habilitation*) graduates. The capability of a HEI to acquire third party funding is seen in this context as an expression of research quality. The number of doctoral and post-doctoral certificates is seen as a reflection of the quality of promoting young academics. Both goals are usually implemented as part of the state-specific set of indicators (see section 2.4).

Context

In their responses, the *Länder* highlight goals which are also discussed in the research literature in connection with introducing performance-based budget procedures. The implementation of models with a direct link to performance is occurring in Germany in the context of governance reforms, which have three main objectives: less intervention of the state, more autonomy for HEIs and more market and competition in the resulting

gap between the state and the HEIs. These reforms are discussed under the term “new public management”.¹¹

2.3 Scope

Summary

The grant allocation models currently used by the German states can all be classified as institutional funding systems, i.e. the performance of the whole institution is assessed. The allocation mechanisms encompass all public HEIs. Private HEIs do not participate in the performance-based allocation models. The same can be said for non-university research institutions. The institutional funding does not differentiate between teaching and research in Germany. This means that all allocation models implemented by the *Länder* cover both teaching and research (and frequently other areas of activity such as equality and internationalisation).

Survey results

- The performance-based grant allocation procedures encompass public universities and universities of applied science (*Fachhochschulen*) in all of the *Länder*. In some of the states, public colleges of art (*Kunsthochschulen*) are also included (Berlin, Brandenburg, Hamburg, Hesse) and in others the university clinics (Bavaria, Hamburg and North Rhine-Westphalia). Colleges of art and university clinics do not participate in performance-based grant allocation in Lower Saxony. In Baden-Württemberg, next to the universities and universities of applied science (*Fachhochschulen*), the teacher training colleges (*Pädagogische Hochschulen*) are integrated into the system.¹² In Bavaria the university libraries are included in the performance-based budget model.
- The performance-based procedures in all German states cover exclusively the public HEIs. Private HEIs do not participate.¹³ Likewise, non-university research institutes are – as a rule – not subject to the same procedures. In Hesse, however, output-based budgets (*Produkthaushalte*) were also introduced for non-university research institutes, which contain performance-related elements.
- All models are integrative and do not only cover research, but both teaching and research together. The weighting of these areas of performance is usually different by type of HEI. In line with their strong, practically-orientated profile, universities of applied science (*Fachhochschulen*) are often assigned models with a stronger weighting of teaching over research than for universities. Additional to these two

¹¹ Cf. Orr / Jaeger 2009; Orr / Jaeger / Schwarzenberger 2007.

¹² *Pädagogische Hochschulen* only exist in Baden-Württemberg. They provide teacher training for all school types except the academically orientated Gymnasien. Teachers for Gymnasien are trained, as in other states, in universities.

¹³ According to provisory statistics from the Federal Office for Statistics, 4.5% of students in Germany were registered in private HEIs in the winter semester 2009/10. Of the 410 HEIs in Germany, 102 (c. 24.9%) were in private ownership (Cf. Statistisches Bundesamt 2010).

core activities, in most cases the models include indicators covering equality and/or internationalisation.

2.4 Model characteristics

Summary

The share of funding for research, which is allocation in relation to actual performance, varies from state to state significantly. The highest share is found in Berlin at approximately 30% for universities (from 2012). Relatively high shares are also to be found in North Rhine-Westphalia (c. 11 %), Baden-Württemberg (c. 10%), Hesse (c. 10 %) and Brandenburg (c. 8%). The shares in the other states are in some cases much lower. Most of the models limit the maximum possible budget loss of a HEI through applying a tolerance band tied to the total volume of the previous year's budget.

A more or less comprehensive set of indicators is used for the assessment of research performance in those HEIs participating in a performance-based model. All of the procedures reporting use both third party funding and the number of completed doctorates for the assessment of performance. Additional indicators are added by each state. Peer review and bibliometric procedures play next to no role in the performance-based public funding of HEIs in Germany. In many cases, budget allocation is executed separately by type of HEI. Furthermore, subject- or discipline-specific weighting is applied.

The administration of the system of performance-based budget allocation is the responsibility of the science ministries in all states. The HEIs participate in the conception, administration and implementation of the allocation models to varying degrees. It is up to the universities and other HEIs to decide whether they use similar procedures for internal budget allocation and, if yes, whether the internal procedures are tightly orientated on the models used at state level or they establish divergent regulations.

Terminology

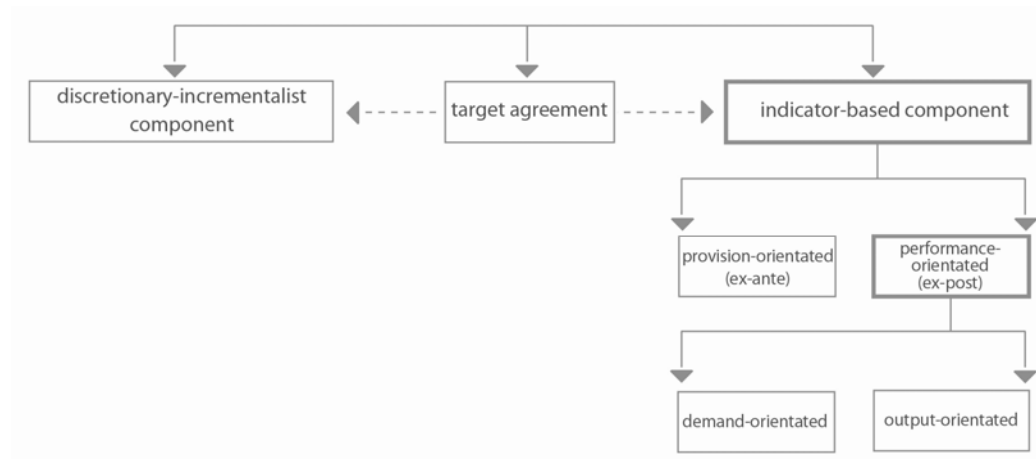
Indicator-based allocation mechanisms can be orientated towards provision or performance. The synopsis presented here focuses on performance-based procedures.

Performance-based components can be orientated towards the outputs of a budgeting unit (e.g. number of doctorates) or demand (e.g. amount of third party funding). Provision-related indicators focus, in contrast, on inputs (e.g. number of professors), for this reason the link to performance is weak. These indicator-based funding components are complemented by discretionary-incrementalist components and target agreements in German funding mechanisms.

Discretionary-incrementalist components remain significant for grant allocations. They can be characterised as single-case decisions which tend not to be transparent (e.g. same budget as in previous year plus discretionary modification). The trend is, however, towards a higher share of funding, which is distributed through target agreements and

indicator-based components. Figure 1 provides an overview on the components used for higher education funding in Germany.

Figure 1 Components of higher education funding in Germany



Source: Leszczensky/Orr 2004, p. 6

Publication of results

In most of the states, budget allocations are made according to performance criteria once every financial term (either each year or in some states for double years). The results are, as a rule, at the least published for HEIs and the regional parliament. In some states they can also be requested by the public (Baden-Württemberg, Lower Saxony).

Size of the performance-based share of the research budget

Performance-based allocations cover all areas of research (basic research, applied research, etc...). The share of funding, which is allocated according to performance criteria varies significantly between the *Länder*. The leader in this respect is Berlin, with its new funding model to be implemented in 2012 with an allocation of 30% of the funding for university research being allocating on the basis of performance. A tolerance band of 5%, however, limits the maximum loss or win which a HEI can make. Relatively high shares are reached by North Rhine-Westphalia (c. 11%), Baden-Württemberg (c. 10%), Hesse (c 10 %) and Brandenburg (c. 8%). In the other states, which responded to the survey, the performance-based components for research are much lower. It should be noted that in many models – as already mentioned for Berlin – tolerance bands are used to limit loss or wins, which lie between 1% and 2% (Berlin 5%) of the previous year's budget and accordingly reduce the maximum loss (or win) of an individual HEI.

Type and number of applied indicators

The German states use more or less comprehensive indicator sets for the assessment of research-performance in those HEIs involved in budgeting models. In all *Länder* ob-

served, the acquisition of third party funding – partly as quota for third party funding by professor or weighted by source or subject area – and the number doctorates – often extended to include the number of post-doctoral graduates (*Habilitationen*) – are used in the assessment of research performance. Additional indicators are used by most states. Berlin will implement a particularly broad set of indicators. Table 2 provides an overview of the indicators for research performance applied in the state funding models.

Table 2 Research-related indicators used in performance-based allocation models by state

State	Research-related indicators
Baden-Württemberg	<ul style="list-style-type: none"> ■ Amount of third party funding by subject area and source ■ Total increase in third party funding ■ Relative increase in third party funding ■ Number of doctorates
Bavaria	<p>Universities:</p> <ul style="list-style-type: none"> ■ Third party funding (weighted) relative to number of professors (unweighted) ■ Amount of third party funding by source ■ Number of doctorates and post-doctorates (<i>Habilitationen</i>) <p>University clinics:</p> <ul style="list-style-type: none"> ■ Amount of third party funding by source ■ Publications by impact factors ■ Number of doctorates and post-doctorates (<i>Habilitationen</i>) in clinical departments
Berlin	<ul style="list-style-type: none"> ■ Amount of third party funding ■ Participation in special research area (DFG) ■ Participation in excellence clusters and research centres of the German Research Foundation (DFG) ■ Participation in graduate schools ■ Participation in graduate colleges ■ Participation in EU/EIT target programmes ■ Number of doctorates ■ Stipends and awards from the Alexander von Humboldt Trust¹⁴ <p>The following indicators are used for <i>Fachhochschulen</i></p> <ul style="list-style-type: none"> ■ Third party expenditure ■ Cooperative contracts with regional business and commercial institutions ■ Publications

¹⁴ The Alexander von Humboldt Trust supports academic exchange and international cultural dialogue. The research stipends and awards of the trust enable research periods in Germany for foreign academics and research periods abroad for German academics.

State	Research-related indicators
	<p>The following indicators are used for art colleges</p> <ul style="list-style-type: none"> ■ Third party expenditure ■ Artistic projects and events
Brandenburg	<ul style="list-style-type: none"> ■ Amount of third party funding ■ Number of doctorates
Hamburg	<p>University:</p> <ul style="list-style-type: none"> ■ Amount of third party funding by number of professors <p>Technical university:</p> <ul style="list-style-type: none"> ■ Number of doctorates <p><i>Fachhochschule:</i></p> <ul style="list-style-type: none"> ■ Amount of third party funding by number of professors <p>Colleges of art and music:</p> <ul style="list-style-type: none"> ■ Artistic projects and events
Hesse	<ul style="list-style-type: none"> ■ Amount of third party funding ■ Participation in coordinated research programmes ■ Number of doctorates and post-doctorates (<i>Habilitationen</i>)
Lower Saxony	<p>Universities:</p> <ul style="list-style-type: none"> ■ Third party funding in a university in a subject area by total third party funding in the respective subject area in Lower Saxony ■ Number of doctorates in a university by total number of doctorates in Lower Saxony ■ Number of Alexander von Humboldt Trust stipend and award holders in the host university by the total number in Lower Saxony <p><i>Fachhochschulen:</i></p> <ul style="list-style-type: none"> ■ Third party funding in a <i>Fachhochschule</i> in a subject area by total third party funding in the respective subject area in Lower Saxony
Nordrhein-Westfalen	<ul style="list-style-type: none"> ■ Amount of third party funding ■ Number of doctorates
Rhineland-Palatinate	<ul style="list-style-type: none"> ■ Amount of third party funding ■ Number of doctorates and post-doctorates (<i>Habilitationen</i>)

In the small so-called city-states (*Staatstädten*) like Hamburg the situation is special due to the small number of HEIs. In contrast to the bigger states, it is not possible to install competitive mechanisms for each type of HEI, as in some cases there is only one of each institutional type. For this reason, the Hamburg model includes an agreement between individual institutions and the state on institution-specific performance indicators chosen from a pool of possible indicators. The weighting of these indicators is also determined by institution.

As can be seen in Table 2, peer review and bibliometric procedures play next to no role in performance-based public research funding in Germany. The only exception, according to survey responses, is Bavaria. The research funding of university clinics is in part dependent on the assessment of publication performance by clinics on the basis of journal impact factors. Peer reviews play a more important role in special state programmes for research funding and evaluation, like the ones in Hamburg, Hesse and Lower Saxony (see section 2.7). These programmes supplement the indicator-based funding systems discussed here.

As mentioned above and shown in Table 2, most states have different sets of indicators by type of HEI. Additional to that comes, as a rule, different weighting of the indicators by subject area.¹⁵ This is done, for instance, to reflect the differing capabilities of subject areas to acquire third party funding. North Rhine-Westphalia has no such differentiation by subject area. There is no information available for the other states.

Administration of performance-based allocation procedures and the participation of HEIs

The administration of the system of performance-based grant allocation is the responsibility of the science ministries (or similar) in all German states. HEIs are involved to varying degrees in the conception, administration and implementation of the systems.

In Baden-Württemberg, the system of performance-based grant allocation was developed in cooperation between the Ministry of Science, Research and Arts and the universities and other HEIs. Further modifications to the model were agreed with the HEIs. In Bavaria, the HEIs cooperated with the state's Ministry of Science, Research and Arts in the development and adaptation of the allocation procedure through the participation of their respective associations (Universitäten Bayern e.V. and Hochschule Bayern e.V.). In Berlin, the individual performance indicators were developed in dialogue between the state senate and the HEIs. According to the state senate, some of the indicators are based on suggestions from the universities. Brandenburg has established a working group consisting of members of the HEIs and the Ministry of Science, Research and Culture, which deals with the continual monitoring and further development of the alloca-

¹⁵ This is the case for Baden-Württemberg, Bavaria, Hesse, Lower Saxony and in part for Rhineland-Palatinate.

tion procedure. In Hesse the allocation model is agreed between the Ministry for Science and Arts and the HEIs in negotiations for the periodic renewal of the Hesse pact on higher education (*Hessischer Hochschulpakt*). The state conference of HEIs in Lower Saxony was involved in the model conception, choice of parameters and demarcation of individual indicators. Furthermore, it is also involved in the further development of the funding model. Universities and HEIs are also involved in the conception of the indicator-based procedures for funding allocation in North Rhine-Westphalia and Rhineland-Palatinate. In North Rhine-Westphalia, the principles and rules of the current model have been elaborated in cooperation with the universities and HEIs and fixed in the target agreements.

Internal allocation practices

The internal allocation of monies in universities and other HEIs lies within the realms of institutional autonomy in all German states and is consequently the responsibility of the institutions themselves. The HEIs are, therefore, free to adopt performance-based procedures or not and, if yes, to follow the procedures used for budget allocation at state level or not. A nationwide survey of universities in Germany in 2004 found the following results regarding the extent to which internal procedures were orientated on state procedures. In the reference year of 2003, ten of the 16 German states used procedures of indicator-based grant allocation for universities. Universities in these states used indicator-based allocation systems more frequently (namely 91% of them) than universities in states without such allocation models (73%). Of the 43 universities, which were in states with indicator-based allocation models, 13 universities (30%) had orientated their internal procedures closely on the state model and 24 (56%) partially.¹⁶

2.5 Impact

Summary

As mentioned in section 2.2, the introduction of performance-based funding mechanisms was linked to various expectations in the German states. Within this context it is interesting to investigate what impact the procedures being used have really had and whether there were non-intended effects. In the responding *Länder*, the impact in terms of steering and performance improvement was seen as particularly positive with respect to the acquisition of third party funding. The assessment of the impact on quality was more reserved: whether a dominance of quantitative indicators in funding models might be to the detriment of quality remains unclear. When interpreting the results it is important to bear in mind that apparent increases in efficiency and performance may, in fact, be linked to other factors – such as the introduction of new study structures. It is, therefore, not possible to make empirical cause and effect judgements in a reliable way.

¹⁶ Cf. Jaeger / Leszczensky / Orr / Schwarzenberger 2005, pp. 25-27.

Survey results

- Considerable insight into the impact of the funding allocation procedures exist in Brandenburg, where the allocation model was reviewed by external evaluators. Both the HEIs and the Ministry of Science, Research and Culture were asked for their assessments. The impact of the model on changing assumptions on higher education governance was seen as particularly positive. Apparently, the introduction of the new funding model stimulated intensive debates on performance components, strategic steering and prioritisation at the level of state administrative, institutional leadership of HEIs and within faculties and departments. At the same time, there emerged an increasing recognition for particular issues such as the significance of attractive study programmes, active recruitment of students and higher education marketing. Furthermore, discussions on drop-outs and equality were intensified. In the view of both the ministry and the majority of HEIs, the transparency and rationality of grant allocations were improved. The ministry also emphasised the benefits of shorter budget negotiations, which had been the subject of long durations in the past. The HEIs emphasised the complementarity between performance-based budget allocation and block grants (instead of line-item budgets). The assessment of performance incentives was also positive. The evaluation of an adequate representation of the tasks of a university and other HEIs and, in particular, of the impact on the quality of performance remains controversial. Many HEIs are afraid that the dominance of quantitative indicators leads to incentives, which might be to the detriment of overall quality.
- In other states, performance improvements were observed in the areas measured through indicators. A significant increase in the amount of third party funding, for instance, was noted by various states and, consequently, an increase in research projects for third parties. In Baden-Württemberg, for example, the amount of third party funding increased between 1990 and 2008 by 58%. The Hesse Ministry for Science and Arts emphasised, additionally, that the competitive behaviour of HEIs had become more intense.

Context

A recent publication on new governance structures in German higher education¹⁷ concludes that the introduction of instruments of new public management, such as target agreements and procedures for performance-based funding allocation has led to “tempered autonomy and competition”.¹⁸ This insight is particularly based on evaluations of performance-based models in Berlin, Bremen, Hesse and Lower Saxony. The following three hindering factors for autonomy and competition were concluded:

¹⁷ Orr / Jaeger 2009.

¹⁸ Ibid, p.45.

- Indicator-based allocation mechanisms – according to the investigation – have not been implemented consistently. It has been observed, for instance, that systems were supplemented by additional measures – particularly in order to pay more attention to qualitative efforts, which were not made transparent and can be characterised as discretionary-incrementalist decisions. In this way they contradicted the objective of indicator-based allocations, which should assure a high level of transparency and predictability.
- As already mentioned in section 2.4, performance-based funding procedures are only one component of state funding in Germany. Parallel to these remain discretionary-incrementalist components. In some cases, it could be seen that discretionary funding decisions worked against the impact of indicator-based mechanisms or neutralised them. The continual existence of discretionary components entails the danger of undermining the budget-related effects of performance-based funding mechanisms through single-case decisions. Traditional and new steering mechanisms must, therefore, be better linked together.
- Irrespective of the funding concept, examples of state-led top-down steering can still be observed, which work against the autonomy of universities and other HEIs. This was particularly clear in the case of the state initiatives to restructure their higher education system, which were associated with the aim of reducing the number of HEIs, through merging or closing institutions.¹⁹

2.6 Further developments

Summary

As already noted in section 2.1, previous funding models existed in many states before the introduction of the current performance-based models. Furthermore, in many cases the current models have been adapted and modified in accordance with new demands, e.g. within the context of Bologna reforms of study structure. Such developments frequently encompass a modification of the set of indicators or an expansion of the share of budget which is allocated by performance. Most states continually monitor the effects of the funding procedure in use.

Survey results

- In Baden-Württemberg a comprehensive overhaul of the model in use since 2000 occurred in 2004. This included re-working the set of indicators. Individual indicators were removed and others changed. Additionally, the basis of the calculations was made more sophisticated to reflect differences between subject areas. Baden-Württemberg is currently planning a total re-design for its funding scheme. This involves constructing a so-called “three pillar model”, as can be found in other states

¹⁹ Cf. here: Jaeger / Leszczensky / Handel 2006; for an evaluation of the Berlin model, see Leszczensky / Jaeger / Orr 2004; for Bremen Jaeger / Leszczensky 2005.

(e.g. Hamburg, Hesse). The model consists of three components – a foundation, a performance-based and an innovation-related component. A special working group was set up under the leadership of Baden-Württemberg’s Ministry for Science, Research and Arts, in order to work on the design and agree the details.

- In Bavaria the share of the budget determined by formula has grown in stages since 1999. Additional modifications in terms of distribution parameters and their weighting have also been made. For instance, the weighting of equality criteria in the university system was raised from 5% to 10%.
- In Berlin the budget share determined by performance criteria was raised again in the new model. Additionally, the set of research-related indicators was expanded. Particular research activities like participating in a cluster of excellence or a research centre supported by the German Science Foundation (see also section 2.7) are rewarded. If academics win special awards such as an Alexander von Humboldt stipend, this also counts positively.
- As already reported (see section 2.4), Brandenburg has a cooperative working group involving both the Ministry for Science, Research and Culture and the HEIs, which has the task of further developing the grant allocation model. However, according to the ministry, there were no big changes since 2004. The model has been extended to include the new academic tariff with performance components (the so-called *W-Besoldung*) and junior professors.²⁰ Hamburg also reports no significant changes since introducing their current procedure in 2005. No modifications are planned in the near future. The same goes for Lower Saxony.
- In Hesse the model introduced in 2003 was re-worked for the first time in 2006. Further changes are planned for 2011. At this time, the share of public grant determined by the performance budget will be raised. Research excellence and study success, in particular, will be rewarded to a greater extent.
- The performance-based procedure currently applied in North Rhine-Westphalia can look back on a predecessor from 1998. Since then the system has been simplified. The differentiation between type of HEI, the parameters and their weighting have been reduced or modified. Concurrently, the share of grant distributed by performance has been significantly increased.
- Similar to Brandenburg, it was changes to context factors which led to the need for adaptation in the funding model in Rhineland-Palatinate. With the introduction of

²⁰ Junior professorships were introduced in 2002. The aim of this new academic category is to provide particularly well qualified young academics with direct access to teaching and research and, through this, to enable them to qualify for a permanent post as professor without the German post-doctorate qualification called “*Habilitation*”.

the higher education pact 2020 (*Hochschulpakt 2020*) modifications were implemented in order to avoid overlaps with the additional grants.²¹

Context

In many German *Länder* so-called higher education commissions have been set up in order to develop the allocation models. These have reviewed and made recommendations for improvements to funding mechanisms on the basis of reports from external experts. Since 2004, for instance, HIS has provided such analyses for the states of Berlin (2004²², follow-up 2008²³), Bremen (2005²⁴) and Saxony (2007²⁵). Central issues for the evaluations were, amongst others, the comprehensibility, transparency and steering effects of the procedures, the appropriateness and the number, type and weighting of the indicators used and the effects of the state level models on internal steering within institutions of higher education.

In many cases, it has proven conducive to further develop the models used within the context of continuity of state governance strategies, with modifications where unintended effects have occurred. Completely replacing a funding system and substituting it with a new system – as has occurred in the past in Lower Saxony and is currently happening in Berlin – can be seen as necessary for particular reasons. At the same time, it causes a fissure in the steering logic. In the knowledge that universities and other HEIs often link their internal funding systems closely to state level models, frequent changes are not recommended.²⁶

2.7 Interaction with other programmes of research funding

Introduction

Questions related to the interaction between performance-based funding models and other forms of research funding were generally left unanswered by the respondents with reference to the need to answer this question centrally – for the whole of Germany. In cases where answers were provided, as a rule they point to the most important research support organisation in Germany – the German Research Foundation (DFG), and the so-called “Initiative for Excellence” from the federal and state governments, which the DFG implements in cooperation with the German Council of Science and Hu-

²¹ The so-called *Hochschulpakt 2020* is meant to lead to the creation of additional study places. This is necessary due to demographic developments and as a result of double cohorts leaving upper secondary school in many states following the transition for nine to eight year Gymnasial-schooling. This “pact” consists of two further streams – one for funding standard costs of research projects and one for supporting quality in teaching and learning (planned).

²² Leszczensky / Jaeger / Orr 2004.

²³ Jaeger / In der Smitten 2009.

²⁴ Jaeger / Leszczensky 2005.

²⁵ Ebcinoglu / Jaeger / Leszczensky 2008.

²⁶ Jaeger / Leszczensky / Handel 2006, p.20.

manities (*Wissenschaftsrat*). The Initiative for Excellence, which has received much international attention, is one of the largest research funding programmes in the last decade. Since it has led to a spirit of optimism in the German scientific landscape, it is particularly relevant for the topic investigated here. The Initiative will be briefly presented, as will the impact it has had on the scientific landscape. In the last section two regional programmes from Hesse and Hamburg with a focus on research excellence will be sketched.

The German Research Foundation (DFG)

As shown in Table 2, the amount of third party funding is the most important performance indicator for research. This means that the acquisition of third party funding from other support organisations is rewarded in state budget allocation systems. The most important organisation for supporting and funding research in HEIs and publically funded research institutes in Germany is the DFG.

The DFG provided grants to support 20,557 research programmes in 2008.²⁷ The total amount granted was 2.646 billion Euros. 37.3% of this sum was allocated to life sciences, 25.9% to natural sciences, 21.4% to engineering sciences and 15.4% to humanities and social sciences.²⁸

The Initiative for Excellence of the Federal and State Governments

In cooperation with the German Council of Science and Humanities (*Wissenschaftsrat*), the DFG is responsible for executing the Initiative for Excellence. This initiative is provided by the federal and state governments for the support of science and research in universities in Germany. As one of the biggest research funding programmes of the last decade it aims to support top-level research and make it internationally visible. At the same time, the breadth of quality in the German scientific landscape should be increased. The objectives are to provide excellent conditions for academic talent in German universities, to intensify cooperation between disciplines and institutions, to strengthen the connection of research in Germany with international partners and to support equality between male and female academics.²⁹

The Initiative for Excellence has three strands:

1. Graduate colleges to support academic talent
2. Clusters of excellence to foster top-level research
3. Institutional strategies to promote top-level university research

²⁷ Deutsche Forschungsgemeinschaft 2008.

²⁸ Ibid.

²⁹ Website: http://www.wissenschaftsrat.de/exini_start.html (12 April 2010).

The first two rounds of the programme in 2006 and 2007 focussed on supporting particularly excellent university performance in the area of research. In the call for proposals from March 2010 for the third support period 2012-2017 universities are asked to include innovative concepts for research-orientated teaching and learning. Furthermore, the impact of institutional strategies on teaching and learning will be explicitly assessed.

In the first round of the Initiative for Excellence the three strands were supported with 1.9 billion Euros; 75% of which was covered by the federal government and 25% by contributions from the *Länder*. The proposals submitted are subject to a two-tier selection process involving national and international experts. The total sum has been raised for the third round, which runs from 2012 to 2017, to 2.7 billion Euros.

In the first two rounds nine German universities won an award for their institutional strategy: RWTH Aachen University, Free University Berlin, Freiburg University, Göttingen University, Heidelberg University, Karlsruhe University, Konstanz University, LMU Munich and Technical University Munich. These nine and 28 additional universities received grants for a total of 39 graduate colleges.

The Initiative for Excellence has really led to a spirit of optimism in the German research landscape. 4,200 scientists have been recruited for the funded projects. One quarter of these academics come from abroad; many of these are in fact returning German nationals. 90% of the academic staff employed are young academics.³⁰

The impact of the initiative has recently been investigated by 14 scientists in an interdisciplinary working group of the Brandenburg Academy of Sciences.³¹ The experts welcome, in particular, the inertia of the initiative. According to them, a high level of creativity has been set free and an experimental field has emerged, which is unparalleled internationally. Positive developments have also been seen for the equality of men and women in science. Besides an appreciation of achievements, the academics warn of the non-intended effects. The Initiative for Excellence has, for instance, led to the creation of many new posts for young academics. However, at the same time, there is a danger that these highly specialised academics will not be able to find further employment once the funded projects close. As regards the subject areas in German universities, the experts are concerned that the areas which do not receive support may be neglected to their detriment and the benefit of subject areas with support. This could particularly impact on small subject specialisms. The selection mechanism could also be improved, according to the experts. It should be more transparent and have more regard to differences between subject areas.

³⁰ Website: <http://www.bmbf.de/de/1321.php> (12 April 2010).

³¹ Cf. Leibfried 2010.

A review of the Initiative for Excellence by an international commission of experts is foreseen in 2016, shortly before the end of the third round of the Initiative.³²

Regional excellence-focussed research funding programmes as exemplified by Hesse and Hamburg

Excellence-focussed research programmes also exist on state level. Two *Länder* reported on their initiatives in their survey responses.

Hesse established an initiative in 2007, which provides research support on the basis of excellence and competition. It is called LOEWE (Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz). With it Hesse wants to set its own impulses for science policy and make the regional scientific landscape sustainable. The programme is meant to fund profile-building measures in regional universities and research institutes, as well as a closer linkage between science, non-university research and industry. In cooperation with the large research organisations, the initiative should help prepare the establishment of additional research institutions, which are in turn funded through federal and state grants. The programme budget will be raised in a number of stages. Seed monies of 65 million Euros were provided in 2008 and 2009. The budget will be 95 million in 2010 and from 2011 annually 90 million. A programme committee and an administrative commission have been set up in order to implement the initiative. The programme committee consists of scientists from HEIs and research institutions outside of Hesse and leaders of industry. The administrative commission is made up of representatives of the ministries of science, business and industry, and finance, along with the state chancellery and the technology council in Hesse.³³

Early 2009 Hamburg introduced the state excellence initiative with the name LEXI (*Landesexzellenzinitiative*). A partner to the initiative is the Joachim Herz Trust³⁴. In the years 2009 and 2010, eight interdisciplinary research groups (clusters of excellence) and five institutes for a structured training of young academics (graduate colleges) were supported with 16.5 million Euros. All proposals were assessed by external experts. Following the first support period, the projects will be evaluated. The aim is to then provide additional support for a further two years until the decisions are made in the third round

³² Website: <http://www.bmbf.de/de/1321.php> (12 April 2010).

³³ Website: http://www.hessen.de/irj/HMWK_Internet?uid=fa560c0b-ed11-9311-1010-43bf5aa60dfa (12 April 2010).

³⁴ The purpose of the Joachim Herz Foundation is to promote education, science and research in the fields of economics and business administration, law, medicine, chemistry, physics and biology. In addition, the promotion of educational institutions and students as part of general education is covered by the foundation's purpose. (Website: <http://www.joachim-herz-stiftung.de/stiftungszweck.php>, 12 April 2010)

of the national Initiative for Excellence. A total budget of 38.5 million Euros will be provided for the expected duration of three and a half years.³⁵

A research and scientific trust for Hamburg was also established in 2009 (*Forschungs- und Wissenschaftsstiftung Hamburg*). It has the objective of promoting excellent projects in the area of basic research. This also aims to further strengthen the research location Hamburg. The trust expects to distribute grants to a total value of 15 million Euros annually.³⁶

³⁵ Website: <http://www.hamburg.de/landesexzellenzinitiative/> (12 April 2010).

³⁶ Website: <http://www.hamburg.de/forschungsstiftung/> (12 April 2010).

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4 Appendix

**1 OECD Questionnaire on Performance-Based Funding for Public Research
in Tertiary Education Institutions**



**WORKING PARTY ON RESEARCH INSTITUTIONS AND HUMAN
RESOURCES (RIHR)**

**QUESTIONNAIRE ON PERFORMANCE-BASED FUNDING FOR
PUBLIC RESEARCH IN TERTIARY EDUCATION INSTITUTIONS**

February 2010

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QUESTIONNAIRE ON PERFORMANCE-BASED FUNDING FOR PUBLIC RESEARCH IN TERTIARY EDUCATION INSTITUTIONS

Background

1. The OECD's Working Party on Research Institutions and Human Resources (RIHR) is undertaking a project on performance-based funding for public research in tertiary education institutions. Its focus is the systems of ex-post evaluation of research outputs and outcomes that are used by some governments in order to allocate a portion of their funding to tertiary education institutions at the institutional level.³⁷ The project aims to:

- Provide an overview of models of performance-based funding systems and how they work;
- Give an account of the indicators that are used in performance-based funding;
- Present the debate and evidence on the effects of performance-based funding systems; and
- Outline country experiences in the use of performance-based funding for public research in their tertiary institutions.

Questionnaire

2. As input to the project, the Secretariat is seeking country-level information on the use of performance-based funding, its features and its perceived impacts, via the attached questionnaire. The questionnaire is being administered by delegates and experts to the RIHR. The OECD Secretariat will synthesise the information provided by participating countries and prepare a paper for discussion and comment at the OECD-Norway Workshop on Performance-Based Funding for Public Research in Tertiary Education Institutions on 21 June 2010. The intention is to publish the findings of the questionnaire along with the other analytical work of the project in an edited volume in late 2010.

3. The target for the questionnaire is the relevant government ministry or department responsible for administering systems of performance-based funding to tertiary institutions. For those countries who do not have performance-based funding systems for public research for tertiary institutions but who have considered such systems in the past or are considering such systems currently, the target for the questionnaire is the relevant government ministry or department that would be responsible for the introduction and functioning of the funding system.

The questionnaire is mainly based on open and semi-open questions in order to capture as much information as possible on the systems and their functioning.

4. In the final OECD report, it is likely that the material provided by countries will be used as the basis of a chapter on country systems. It may also be presented in greater detail in an annex.

Schedule for completion

5. The deadline for returning the questionnaire is **Friday 2 April 2010**. The results should be sent to the OECD, care of Sarah BOX (contact details on cover).

QUESTIONNAIRE

Part A: For countries with performance-based funding models for public research in tertiary education institutions:

[For those countries that do not have performance-based funding but are considering (or have considered) its introduction, please go to Part B]

***Please note, Annex A contains a list of definitions that may assist in the completion of this questionnaire.*

1. Timing:

- When was the current performance-based system for funding of public research in tertiary education institutions first implemented (*i.e.* took effect in budgets)?

-
- How long did it take to introduce the system (*i.e.* what period of time elapsed between the first considerations of the system and its eventual implementation)?
-

2. Rationale:

- What was the main purpose/rationale of establishing the system? (If several “main purposes”, please rank them). For example:
 - To concentrate research funding (prevent fragmentation)?
 - To create an incentive for improved quality in research?
 - To demonstrate to the public that funding for research is spent optimally (accountability)?
 - To make quality visible to the public?
 - Other (please specify)
-
-
-

3. What types of tertiary/higher education institutions are included in the system? At what level is the system targeted (*e.g.* does the performance-based funding system apply at the level of research centres?)

4. Is there a corresponding performance-based funding model of teaching in tertiary institutions and, if yes, how does it interact with the system of research funding?

5. Please describe the current performance-based funding system for public research in tertiary education institutions. Some issues to consider include:

5a) What are some of the key features of the system?

- How frequently is performance assessed? Are the assessment processes and results made public?
- Does the system cover all types of research (basic, applied, experimental development) and all fields?
- What share of government funding to the institutions is allocated through the system? (If possible, please specify the share of public general university funds [GUF] and research capital expenditure that is allocated via the performance-based system).
- Do these features differ according to whether institutions are public or private?

5b) Indicators of performance:

- What indicators of performance are used? (*e.g.* outputs of reviews by panels/peer reviewers, levels of external funding, bibliometric indicators, etc)
- What is the role of institutional peer review vs metrics-based indicators? What weighting is given to various indicators?
- How are the indicators applied to different disciplines?

5c) Administration:

- Who is responsible for the allocation of funds distributed under the performance-based system (*e.g.* government authorities, intermediary agencies)?
- Does this differ according to whether the institution is public or private?

5d) The role of the tertiary education institutions:

- What involvement do tertiary institutions have in the design, administration and implementation of performance-based funding systems?
- How are the individual institutions expected to follow up in the internal allocation of performance-based funds?

6. Effects of performance-based funding systems:

- What have been the effects of the funding system on tertiary education institutions and the research system as a whole? Have there been any unintended effects, and were these viewed as positive or negative? Please highlight any evaluations or other evidence.
- In what areas are the effects still unclear or unknown?

7. Evolution of performance-based funding systems:

- Have there been major changes in the system since it was first adopted? In this case, what were the changes?
- Are there plans to change the system in the near future? If yes, why, and what are these changes expected to be?

8. Are there other national systems of regular evaluation of research, conducted by ministries, the research council(s) or others? If yes, please describe briefly.

9. How does the government's performance-based funding for institutions interplay with other funding mechanisms within the tertiary education sector (*e.g.* project funds from government, EU funds, private funding, regional funding...)? Are there any frictions or co-ordination issues?

Part B: For countries that are considering (or have considered) introducing performance-based funding models:

10. What kind of considerations has the government made, related to questions 2-9?

Annex A: Definitions

'Applied research' is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific aim or objective. (See OECD 2002, p. 78)

'Basic research' is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. (See OECD 2002, p. 77)

'Experimental development' is systematic work, drawing on knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed. (See OECD 2002, p. 79)

'Government funds' refer to expenditure of public authorities at all levels of government (central, federal, provincial, state, local and municipal). They include spending on research activities by ministries or equivalent institutions dealing with different areas (e.g. Research, Science, Technology and Industry) as well as spending channelled through intermediate agencies.

'Project funding' refers to money attributed to a group or individual to perform a research activity limited in scope, budget and time. Most project funding instruments allocate money directly to individual groups according to criteria and selection processes decided by the managing agency. The Frascati Manual's category of "direct government funds" for higher education institutions is broadly comparable to project funding, although the data have some limitations. (See Lepori *et al.*, 2007)

'Public general university funds (GUF)' refers to the general grant that universities receive from the ministry of education or corresponding provincial or local authorities in support of their overall research and teaching activities. The R&D content of these public general university funds should be credited to government as a source of funds, and is usually identified as a subtotal of GUF (see OECD 2002, p. 117). The terms "research core funding" and "block grants" are frequently used to refer to these general grants that are provided periodically (e.g. annually) to tertiary education institutions for research activities.

For the purposes of this questionnaire, the term 'public research' refers to creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, that is funded in part or in full by government funds.

The term 'research capital expenditure' refers to spending on fixed assets for use in R&D activities. Capital expenditures are composed of expenditures on: (1) Land acquired for R&D (e.g. testing grounds, sites for laboratories and pilot plants) and buildings constructed or purchased (including improvements); (2) Major instruments and equipment; and (3) Computer software, including annual li-

censing fees. Small tools and instruments and minor improvements to existing buildings will normally be excluded in measuring capital expenditure as in most systems these items are usually carried on current cost accounts. (See OECD 2002, pp. 111-112)

For the purposes of this study, '*research centre funding*' (e.g. Centres of excellence, Chairs of excellence etc.) refers to funding allocated by government authorities and/or intermediate agencies to specific research centres. Such research centres focus on a specific research/scientific area and can be part of a tertiary education institution (TEI), associated to a TEI or involve researchers from several TEIs and other research organisations.

'Tertiary education institutions' include all universities, colleges of technology and other institutions of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with higher education institutions. (See OECD 2002, p. 68)

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