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The Performance-Based Funding Scheme of Universities

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Abstract. *The purpose of this study is to analyse the effectiveness of the performance-based funding scheme of the Finnish universities that was adopted at the beginning of 2013. The political decision-makers expect that the funding scheme will create incentives for the universities to improve performance, but these funding schemes have largely failed in many other countries, primarily because public funding is only a small share of the total funding of universities. This study is interesting because Finnish universities have no tuition fees, unlike in many other countries, and the state allocates funding based on the objectives achieved. The empirical evidence of the graduation rates indicates that graduation rates increased when a new scheme was adopted, especially among male students, who have more room for improvement than female students. The new performance-based funding scheme allocates the funding according to the output-based indicators and limits the scope of strategic planning and the autonomy of the university. The performance-based funding scheme is transformed to the strategy map of the balanced scorecard. The new funding scheme steers universities in many respects but leaves the research and teaching skills to the discretion of the universities. The new scheme has also diminished the importance of the performance agreements between the university and the Ministry. The scheme increases the incentives for universities to improve the processes and structures in order to attain as much public funding as possible. It is optimal for the central administration of the university to allocate resources to faculties and other organisational units following the criteria of the performance-based funding scheme. The new funding scheme has made the universities compete with each other, because the total funding to the universities is allocated to each university according to the funding scheme. There is a tendency that the funding schemes are occasionally improved. The findings of this study are useful for those who wish to modify the funding scheme in the future.*

Keywords: *financing, funding scheme, incentives, performance, university, higher education.*

Introduction

The long duration of studies and low graduation rates in higher education have attracted attention from Finnish decision-makers who are trying to find solutions to the weak performance of universities. Performance-based funding represents an attempt to encourage universities to improve quality and performance while helping the nation to improve economic growth and

employment. The aim of performance-based funding is to motivate institutions to improve their processes of research and education. Previous studies indicate that the effectiveness of performance-based funding is limited (Volkwein & Tanberg, 2008). Public funding represents only a small proportion of the total funding of higher education in many countries, diminishing the steering effect. Finland is an exception, because Finnish universities require no tuition fees in degree education.

The funding scheme of Finnish universities was changed at the beginning of the 1990s and introduced some performance-based elements. The university reform separated universities from the state, made universities legal entities and increased the importance of output measures in 2010. Each Finnish university and the Ministry of Education and Culture conduct performance negotiations at the beginning of the agreement term. The Ministry sets operational and qualitative targets for the university and determines the resources required. The performance agreement provided the funding for universities based on the number of students and the expected and actual number of degrees until 2012. Funding was also allocated to the quality and internationalization of education and research and the activities of the education and science policy. The reform in 2013 increased the importance of output measures.

The new performance-based funding scheme has been used to allocate the state funding to Finnish universities since the beginning of 2013. While efforts have been made to develop a more transparent and clearer funding scheme in order to increase its steering effect, the elaborate indicator-based system, particularly in the case of Finnish universities, has over the years become increasingly complex because there has been a tendency to introduce new elements to the unsatisfactory scheme (Melin *et al.*, 2015).

The purpose of this study is to describe and analyse the performance-based funding scheme of Finnish universities based on many output-based indicators. The funding scheme is translated to the strategy map of the balanced scorecard approach developed by Kaplan and Norton (2001, 2004). The strategy map reveals that the funding scheme does not pay attention to the research and teaching skills of universities. Neither does it encourage universities to increase the funding of education by means other than state funding. The missing indicators of the funding scheme are left to the autonomy of the universities.

Results from the United States show that performance-based funding schemes have been unstable and uneven. The study by McLendon, Hearn and Deaton (2006) shows that only half of the states have adopted performance-based funding for higher education, and half of those that adopted

performance funding later eliminated it. These poor results have led to the many changes in the amount and criteria of public funding (Dougherty, Natow & Vega, 2012). The balanced scorecard approach is useful, because it aims to balance the perspectives of the customer, financing, processes and structures, and learning and growth. It also makes sure that all the necessary elements are included in the implementation of the funding scheme.

Empirical evidence is presented using the data of Education Statistics compiled by the Statistics Finland. The results indicate that unlike in many other countries, the graduation rates in Finland improved when the new funding scheme was adopted. In particular the graduation rates improved among male students, who on average have lower graduation rates than female students. This notable steering effect can be explained by the fact that there are no tuition fees, and state funding has a notable role in the total overall funding of Finnish universities. In such a situation, universities attempt to improve their processes and structures in order to obtain as much state funding as possible.

The remainder of this paper is set up as follows. The next section includes the literature review, which argues that funding schemes in higher education should create incentives for universities, teachers, and students to improve performance. The third section includes data and methodology. It presents the performance-based funding scheme of the Finnish universities and transfers it to the strategy map, which can be used to reveal the unbalanced indicators of the funding scheme. The results and discussion in the fourth section present the empirical evidence about the graduation rates for Finnish universities at the time when the new funding scheme was adopted. The concluding comments are presented in the final section.

Literature review

The shift of the cost burden from governments to students is a worldwide trend manifested in the introduction or increasing of tuition fees and user charges for food and lodging, along with the diminution of student grants. The phenomenon is seen globally and recently also in Europe, which had for a long time remained a continent where higher education did not commonly require tuition fees. Finland is one of the last bastions where education toward degrees is free from tuition fees. This provides an interesting environment in which to study the performance-based funding scheme, which was adopted in Finnish universities from the beginning of 2013.

Most developed countries have subsidized the provision of higher education and applied funding schemes which rely on contributions from students. The

problem with tuition fees is that some of the students may be unable to pay them, and even if loans are available, education is often viewed as a risky investment, which can hinder participation. Funding schemes that rely on income-contingent loans provide insurance against uncertain educational outcomes (Del Rey & Racionero, 2010). Loans, when offered, should be large enough to cover tuition fees and living costs.

Chapman (2006) considered the following funding schemes: 1) the traditional tax-subsidy system where the cost of education is financed by general taxes, 2) pure loans, where each student pays for her or his own education, 3) income-contingent loans with risk-sharing, where successful graduates pay the full cost of their education but the cost to educate unsuccessful students is financed by general taxes and is, hence, shared by the whole population, and 4) income-contingent loans with risk-pooling, where successful students pay the full cost of the education of their cohort. Repayment can be income contingent or limited to a certain percentage of earnings, income surtax, or additional tax on income until the loan has been repaid (Johnstone, 2004).

Finland offers income-contingent loans for living costs financed by general taxes. García-Peñalosa and Wälde (2000) show that, when education outcomes are uncertain and the degree of risk aversion is large enough, income-contingent loans with risk-pooling are better than either pure loans, because they provide greater insurance, or income-contingent loans with risk-sharing, because they do not involve any redistribution from non-students to students. Del Rey and Racionero (2010) also agreed with these results and found that the income-contingent loans provide a system with the largest insurance.

The arguments for funding higher education via lower state funding and higher tuition fees largely rest on the slow economic growth, which forces central governments to cut expenditures on higher education. Vandenberghe and Debande (2008) estimated how higher tuition fees influence graduates' private return on educational investment using data from Belgium, Germany, and the United Kingdom. They found that increasing tuition fees and costs of higher education does not significantly affect the private rate of return. The introduction and increase of tuition fees shifts the cost burden from the public sector to students.

The educational ambitions of students depend on their social background (Holm & Jaeger, 2008). The proportion of students from disadvantaged backgrounds is lamentably small and the public funding comes from general taxation while the major beneficiaries come from better-off backgrounds (Barr, 2005). When students and their families pay little or nothing, either in

tuition or for food or lodging, the students may be too tempted to remain in that status for a very long time, denying society and the economy the advantages of their potential productivity and presumed enhanced usefulness, whether to themselves or to the state. However, with a little cost sharing in the form of tuition fees and other costs, a much greater incentive is at least presumed to be on the part of the student to study hard and graduate on time (Johnstone, 2004).

Tuition fees and income-contingent loans with risk-pooling is one option which can be considered in Finland in the future. The duration of studies is a great challenge to Finnish education policy, because the duration of higher education studies in Finland is among the longest in the countries of the Organisation for Economic Cooperation and Development (OECD). In 2013, the median time to master's degree completion at universities was 6.5 years (Melin *et al.*, 2015).

The Finnish funding scheme relies on the myth that all universities are identical, should act identically, and should therefore be funded equally, and therefore can be questioned, but differential central funding is too complex to be the only mechanism. Barr (2005) argues that universities could institute a funding system by which institutions can charge to reflect their different costs and missions. Universities could collect the fees, which are covered by a loan entitlement. Students receive substantial benefits without tuition fees. It is therefore efficient and fair that they bear some of the costs (Barr, 2009). Tuition fees give universities more resources to improve quality and help improve efficiency, but an obvious argument is that fees deter students from poor backgrounds to be saddled with income-contingent loans.

Political objectives are implemented by public funding and, in many cases, by performance-based funding schemes. The political decision-making tries to implement incentives to improve performance and establish sanctions for poor outcomes (Alexander, 2000; Burke, 2002; Herbst, 2007; Layzell, 1999; McLendon *et al.*, 2006). Performance funding emphasises the importance of public accountability and dilutes the scope of institutional autonomy (Alexander, 2000; Dunn, 2003; Huisman & Currie, 2004; Lane, 2007). Strategic thinking and strategic management have been noted important in higher education institutions (Nicolae & Vițelar, 2013; Brătianu, 2015). The weakening of institutional autonomy subsequently reduces the importance of strategic management at the institutions.

Public accountability and performance-based funding schemes have largely failed to achieve any real improvements in student outcomes. Volkwein and Tandberg (2008) present empirical evidence about failed accountability

policies and government reforms in the United States using the dataset from 2000 to 2006. In addition, the study by Nisar (2015) found that paying for performance in most impact assessment studies have shown that such accountability policies have had a limited effect on the performance of higher education institutions in the United States. Moreover, the study by Dougherty and Reddy (2013) indicates that the underlying theory of performance-based funding is not well understood or articulated and it has done little to improve educational outcomes. One of the reasons is that performance-based funding represents only a small share of the total funding with tuition fees and other income. In addition, the role of teachers and other staff has not been fully analysed.

The performance-based funding scheme may not be efficient to increase incentives, because the autonomous teachers may not be interested in the general objectives of education policy and the university if they do not receive any personal benefits from the increased funding. The performance-based funding scheme is also unable to create incentives for students to be efficient and graduate by the scheduled time. Students' incentives cannot be improved solely by the performance-based funding scheme, but the literature suggests income-contingent loans for the relevant funding mechanism.

Data and methodology

The challenges of Finnish education and science policy include internationalisation, doctoral education, late starting time in higher education, the long duration of studies, and the quality of research infrastructure. Small organisational units, the innovative working environments of institutions, and lack in risk taking have been seen as elements affecting the low quality of activities. The incoherence, low focus, and differentiation of higher education institutions have been seen as obstacles to high quality.

The Government Programme states that the funding scheme should be renewed to better support the objectives of education policy such as completion of studies, faster transition to working life, the intensification of administration, the improvement of quality in education and research, internationalisation, and the stronger profiling of institutions to their focal areas. The funding scheme of universities aims to improve the achievement of the political objectives at the universities.

The performance-based funding scheme creates prerequisites for the main tasks of universities, which include education towards degrees and research affecting the societal relationship and external impact of the university. It is

natural that the funding scheme should include funding criteria that describe the main tasks of institutions. Additional funding is available for research, but less so for education, because Finland has no tuition fees in degree education.

The purpose of the funding scheme is to create stability for the universities so that the funding is based on the average performance of the previous three years. Each university knows the next year's funding in its budget because funding is based on the calculation of the criteria of three previous years. Another purpose is the efficiency and effectiveness, which are implemented by output indicators. Most of the funding criteria are based on the results achieved by universities. The funding of the education and science policy is agreed for the period of performance agreement, which is four years.

The funding of education is based on the number of master's degrees agreed upon for the period of the performance agreement. The agreed-on numbers of degrees are upper limits for the performance funding and make sure to achieve the needs of society. With 55 European Credit Transfer System (ECTS) credits annually, the funding scheme also spurs the efficiency of the education process to shorten the duration of studies and increase the number of degrees awarded. The employment of graduates is also taken into account. The student exchange encourages incoming and outgoing students to have at least three months' mobility.

The funding of publications is based on the quality criteria. The Publication Forum of the Federation of Finnish Learned Societies maintains and develops the classification of scientific publication channels. It has a rating system of one (basic), two (leading) and three (top) to classify the quality of articles. Monographs also have a category, which has a weight of four. The number of doctoral degrees is classified in research with a notable weight in the funding scheme and is agreed upon as an upper limit in the performance agreements. The funding scheme encourages an institution to increase the competition for external funding for research, because state funding is not sufficient for all the necessary research. The scheme also encourages institutions to increase the number of foreign teaching and research staff and doctoral degrees to foreign students.

The funding of education and science policy aims to create a high international profile, the implementation of institutional strategic plans, and the national tasks of institutions such as appliance intensiveness and education in small groups. This funding aims to encourage institutions to make structural changes to bigger units and other aims of the education and science policy. The funding also includes funding specific requirements in the more expensive fields of education such as appliance intensiveness in natural sciences, technology, and medicine, and expensive education in arts

education. It also supports the National Library of Finland and Teacher Training Schools.

The performance-based funding scheme means that universities are competing with each other. This is based on the fact that the annual state budget allocates a certain amount of funding for the university sector, and the funding is allocated for universities based on their performance. If a university improves its performance of the indicator more than others, the university is able to increase its funding on the basis on that criteria. The other indicators allocate funding in a similar way. The development of all the indicators and their weights determines the total funding. It is ideal for any university to keep its business secret about how to improve their efficiency when competing with other universities.

Figure 1 describes the performance-based funding scheme of Finnish universities from the beginning of 2013. The funding scheme is a matrix where education, research, and education and science policy are described by the horizontal shapes while the external impact, quality, and internationalisation are described by the vertical columns. The crossroads of horizontal and vertical shapes include 15 criteria of the funding scheme. The weight of education is 41%, research 34%, and education and science policy 25%.

Education policy is a political plan for a better future. The strategic plan is an institutional blueprint which takes into account education policy and designs a better future. The strategic plans are commonly implemented and communicated using balanced scorecards developed by Kaplan and Norton (2001, 2004). The balanced scorecard approach has been widely implemented in higher education (Kettunen, 2008, 2011, 2015). Hence the balanced scorecard can be applied in education policy and the performance-based funding scheme.

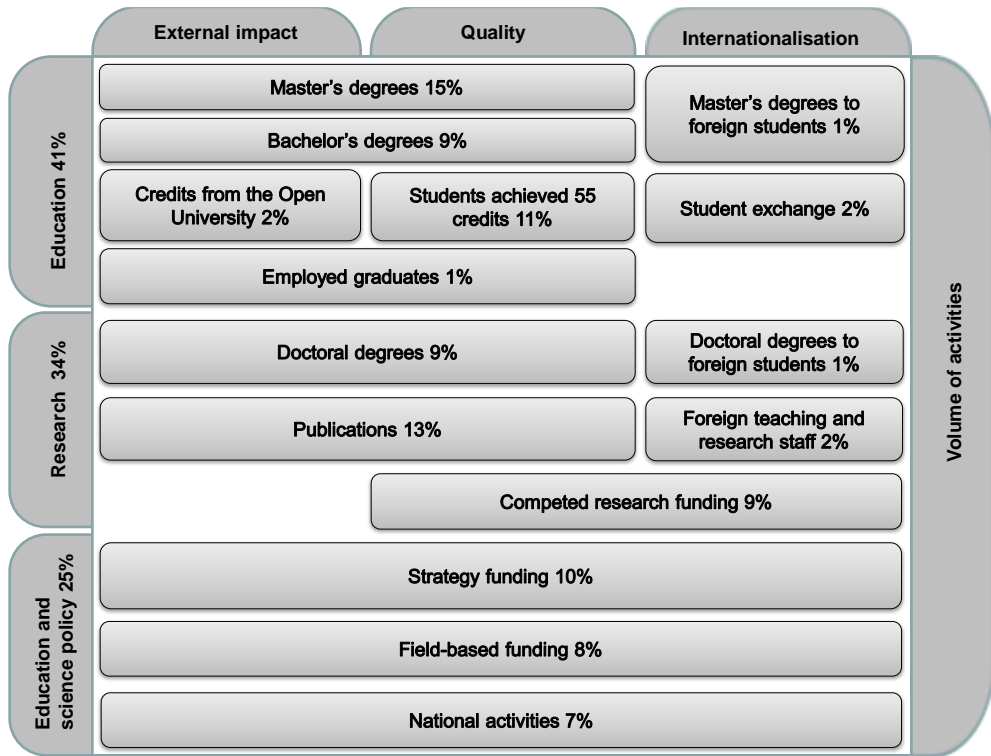


Figure 1. The performance-based funding scheme of Finnish universities from the beginning of 2013

Figure 2 depicts the strategy map of the performance-based funding scheme of Finnish universities. The strategy map developed in this study includes the perspectives of customers, financial, processes and structures, and learning and growth, along with causal linkages between them. The strategy map is a useful tool for making sure that all the necessary and relevant elements are included in the future planning. Hence it can reveal elements that can be included in the scheme in the future, when it is better, developed to meet the needs of education policy and the reality of universities.

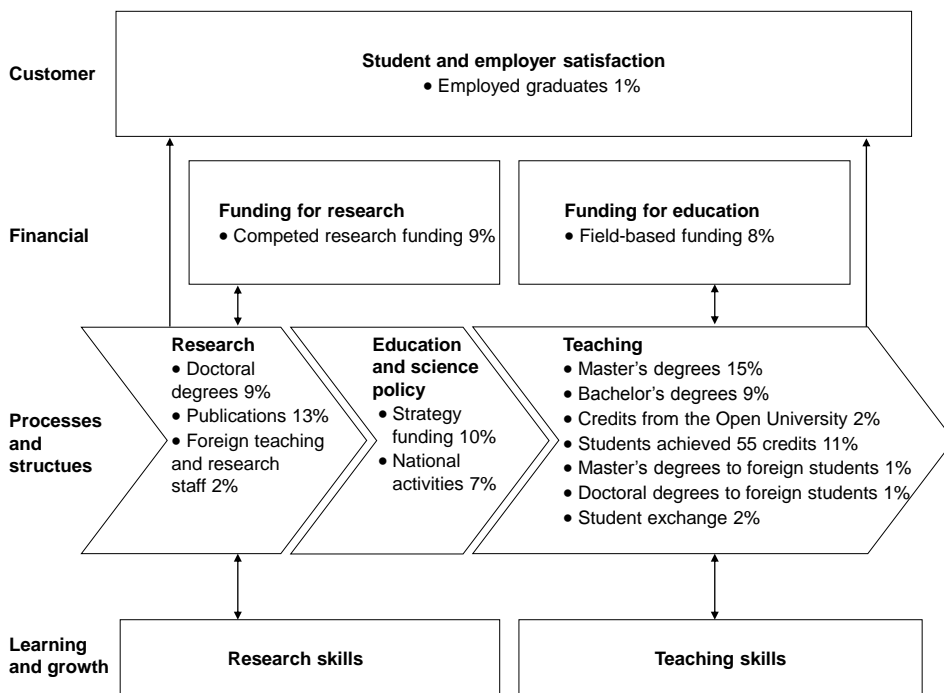


Figure 2. The performance-based funding scheme of Finnish universities placed in the strategy map

The customer perspective includes only the number of employed graduates with a small weight of 1%. When the funding scheme described in this study was initially planned, there were plans to also include feedback from students in the funding scheme, but there were statistical difficulties including the feedback indicator in the scheme and therefore that was left for future development.

The financial perspective includes the objectives “funding for research” and “funding for education”. The funding for research is obtained from the frame programme Horizon 2020 of the European Union, international foundations and funds, the Academy of Finland, the Finnish Funding Agency for Innovation (Tekes) and various companies. Funding for degree education comes entirely from the state. The funding for continuing education and service to society is not included in the funding scheme, but it only includes the field-based funding of expensive education with a weight of 8%.

The processes and structures perspective depicts the innovation chain from research to support services and structures (education and science policy) and finally teaching. The research process includes the research indicators with a total weight of 24%, support services and structures with a weight of

17%, and teaching, which has the highest weight of 41%. Criticism can be presented on the placement of the number of doctoral degrees and on the number of doctoral degrees of foreign students. They are not only doing research but also receiving education at the same time. Another criticism can be presented on the foreign teaching and research staff, which partly belongs to teaching.

The learning and growth perspective is non-existent in the funding scheme. The perspective does not have any indicators included in the funding scheme. One of the key issues of the balanced scorecard approach is that it is an extension of accounting and action plan to also include learning and growth, which is important in the knowledge economy, especially in knowledge-intensive organisations. The funding scheme also does not pay any attention to the knowledge and skills of teachers and research staff, even though they are important drivers of the external impact, quality, and internationalisation. The knowledge and skills are left to the autonomy of universities. There is no obligatory teacher training at Finnish universities.

The overall methodological approach of this study is to connect the research questions and theoretical concepts as empirical data and select relevant tools and procedures as the coherent whole following the outlines presented by Bryman and Bell (2011) and Punch (2005). Qualitative research is used in this study to interpret the behaviour of universities. A case study described by Yin (2003) involves an interpretative approach, which is used here to capture the performance-based funding scheme, the balanced scorecard approach and empirical evidence. An interpretative study seeks enlightened details and a subjective understanding about the institutional management that is commonly omitted in quantitative studies (Mason, 2002).

Results and discussion

The central statistical office of Finland, Statistics Finland, published Education Statistics concerning the years 2012-2013, when the new performance-based funding scheme was introduced. The reform of the new system was well known at the universities beforehand, because the rectors of the universities and many other people were involved in the planning of the funding scheme. Hence the universities had time to adapt to the new system even though the teachers and other staff of the universities value autonomy and inevitably have some degree of resistance to change.

Table 1 depicts the graduation rates of students at bachelor's or master's degree level at Finnish universities in 2012 and 2013 by gender and measured at 4.5 and 5.5 years of study. The results indicate that graduation

rates have increased at the 4.5 years of study mark. The most notable effect was seen among male students. The graduation rates did not, however, change notably at 5.5 years of study. It is also noteworthy that female students clearly achieve higher graduation rates than male students. Later years will provide more evidence about the graduation rates, but at this stage we can conclude that these preliminary results support the argument that the performance-based funding scheme promotes more rapid graduation.

Table 1. The graduation rates at bachelor's and master's degree levels at Finnish universities in 2012 and 2013

Length of study	Gender	Graduation rate 2012, %	Graduation rate 2013, %
4.5 years	Male	36.9	40.2
	Female	58.6	59.3
5.5 years	Male	49.6	49.4
	Female	68.8	69.0

The balance between public and private funding of education is an important policy issue. Higher education institutions receive a large share of their funding from public sources. The share of the performance-based funding in different countries is difficult to determine in an exact way, but de Boer *et al.* (2015) gave estimates for countries in the university sector: Netherlands 27-32%, Austria almost 100%, Australia 20%, Denmark 60%, England 50%, Finland 75-100%, Hong Kong 23%, Ireland 0.8% in 2015 and 10% in the future, North-Rhine Westphalia 23%, Louisiana (USA) 25%, Scotland 85%, Tennessee 100%, Thuringia (Germany) 55%.

The steering effect and clarity of the funding scheme depend on the potential of universities to influence the funding criteria. The national funding scheme has a stronger effect in Finland than in many other counties, because higher education in Finland has no tuition fees. Hence the funding scheme limits the scope of the universities' autonomy. It also limits the scope of strategic decision-making for the university, which must carefully follow the funding scheme if it wants to secure as much state funding as possible. Performance-based funding has also diminished the importance of performance agreements between the university and the Ministry of Education and Culture.

Funding is targeted to universities according to the performance-based funding scheme. The university is able to allocate the funding to faculties and support services as they choose. If the central administration of the university uses its own funding scheme that is entirely different from the national funding scheme, that does not create incentives to behave according to the national funding scheme. Therefore it is optimal for the central

administration to use the national funding scheme when it allocates resources to the various organisational units of the university.

Quality is a notable element in the funding scheme. It is meaningful, however, to note that the funding scheme does not pay attention to the quality audit of the national quality assurance agency. The quality assurance systems of the Finnish universities are audited every sixth year by the Finnish Education Evaluation Centre, which is the national quality assurance agency. If the university does not pass the quality audit, it will be re-audited after two or three years, but this does not affect the funding of the university.

Conclusions and implications

This study analysed the performance-based funding scheme of Finnish universities adopted from the beginning of 2013. The new funding system brought a notable amount of output measures to the funding scheme, which aims to improve performance and quality in higher education. The study is interesting because Finland is one of the few remaining countries that have no tuition fees for higher education. Compared with other countries where public funding has only a minor share of the total funding, the Finnish system has larger incentive effects on efficiency and effectiveness.

The importance of strategic planning and performance agreements between the university and the Ministry has diminished due to the indicator-driven performance-based funding system of the universities. It is optimal for universities to improve processes and structures to achieve as much public funding as possible. It is also best for the university to allocate resources to the faculties and other organisational units following the criteria of the state funding. The funding scheme forces universities to compete with one other.

The performance-based funding scheme was translated to the strategy map of the balanced scorecard approach, which is able to make certain that all the necessary elements are included in the scheme. The strategy map revealed that the Finnish funding scheme does not cover research and teaching skills but leaves them to the autonomy of the universities. The funding scheme does not include any output measures in the funding of education even though continuing education and service to society are potential activities to collect external funding.

The empirical investigation demonstrates that graduation rates have increased at the bachelor's and master's levels since the new funding scheme was adopted. The Education Statistics of the central statistical office show that the increase was found at 4.5 years of study. Graduation rates overall are higher among female students, but the increase in graduation rate was

notable among male students, who have more room for improvement. At 5.5 years of study, there were no notable changes in the graduation rates. These results support the argument that the performance-based funding scheme is able to affect the graduation rate.

The performance-based funding scheme and the balanced scorecard approach presented in this study are limited to Finnish universities, but they can be modified for various countries to improve the efficiency and effectiveness of higher education institutions. A challenge and indeed a fruitful topic for further study is to analyse the sector of the Finnish universities of applied sciences, which adopted a new performance-based funding scheme at the beginning of 2014. Another important challenge is to study the motivation of students and personnel to stimulate improvements in the quality and efficiency of the teaching process.

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