

The ‘Standard Cost’ Reform in Italy: Redistribution and Rebalance in Higher Education Funding

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Abstract

In December 2014 a reform of the allocative formula of the core budget of Italian state universities, aimed to increase allocation efficiency, was put into effect. The new funding method detaches from the old practice mainly based on historical expenditures, because the ‘base component’ of system basic funding is now allocated on the basis of the principle of the so-called ‘standard cost per student’. At the same time, the ‘performance-based component’, already operative in the previous funding formula, is increased. This paper aims, first, to analyze the impact of the new funding allocative method by looking simultaneously at the allocation changes in the ‘base component’ and at the performance-based component. Second, we assess whether the new funding formula leads to a rebalance of state funding among Italian state universities. Our results support that the new funding policy produces a redistribution and rebalance of state funding, leading towards increased allocation efficiency.

Keywords: Higher education reform; Budgeting policy; Funding formula; Italy; Gelmini Reform; Standard cost.

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Introduction

The global economic downturn and the consequent crisis of welfare states have plunged most of the Western governments in a new era of public-spending cutbacks and austerity (Nelson and Balu 2014). Western countries started to reform the funding system of their public policy sectors to save money, increase efficiency, and oblige public bureaucracies to act more responsively towards their citizen-users (Pollitt and Bouckaert 2011). Budget reforms have been consequently widespread and driven by the pressures to restrain the growth of public expenditure for macro-economic reasons, and to increase efficiency and effectiveness in the use of public money. However, tensions between pressures for change and historical legacies are evident in reforms approved in most countries.

Among public policy sectors, higher education (HE) has been one of the most shocked by budget cuts (European University Association 2014). This particularly occurred in Southern European countries (Paleari et al. 2015). The Italian HE system is among those having faced the most severe cut of governmental funding despite Italy was already the OECD state with the lowest percentage of public expenditure on tertiary education as a share of overall national state public expenditure (OECD 2014).

Within the Italian HE sector, university budget cuts took place through a “cheese-slicing” approach until 2013. Instead, in December 2014, a reform of state funding allocative method entered into force (ministerial decree 815/2014; inter-ministerial decree 893/2014), embodying a turnaround in the Italian HE system funding policy. The reform introduced a new funding formula for allocation of the annual basic operational grant of Italian universities (*Fondo di Finanziamento Ordinario*, FFO), which covers about 53 per cent of the overall budget of the Italian state university system (ANVUR 2014). This formula progressively detaches from the old practice largely based on historical expenditures, replacing it with the so-called ‘standard cost for student’, a systematic calculation of the cost per student for every university. The rationale that justifies the reform of the substantial rules to allocate the core budget is the pursuit of allocation efficiency. In fact, the legislation departs from the assumption that historical expenditures implies unjustified differentiation in the unitary cost per “product” (namely on-time student) and that rebalance and equity in resource distribution should be pursued in a gradual manner to recover sector efficiency. This shift in the allocation method is a crucial case study in Italy since the diffusion of systematic cost calculation in the Italian public administration was overall limited and patchy (Ongaro 2009): the HE sector is the first Italian public policy sector abandoning historical expenditures to introduce the ‘standard cost’ approach¹.

However, a gap can be between formal decision to ‘have’ a particular reform and the day-to-day practice of government agencies (Pollitt and Bouckaert 2011). Focusing on the Italian HE sector, a systematic gap between government publicly expressed ideas and actual actions and behaviors was

identified by several authors (Reale & Potì 2009; Rebora & Turri 2009; Capano 2011; Donina et al. 2015). Thus, filling in the literature on financial management reforms and on budgeting allocation in higher education system, this paper aims to test whether the new Italian funding allocation methodology leads to an effective redistribution and rebalance of public sources among state universities. In fact, funding redistribution cannot be taken for granted: in other countries, the re-design of budget allocation policy sometimes produced extremely limited redistributive effect (i.e., Orr et al. 2007).

To achieve our goal, first, we map the redistributive effect of the annual basic operational grant of Italian state universities across the teaching and the research dimensions pursuant to the system budgeting allocation reform. Second, we investigate whether the new ‘standard cost’ formula is leading to equity and rebalance of the teaching-related component of the core budget of Italian state universities. For this purpose, we separate the performance-related component and we assess whether the ‘teaching cost-effectiveness’ indicator is significantly correlated to the variations of student enrollments in the previous years. Our results support that the new funding policy leads to an effective redistribution and rebalance of state funding within the Italian HE system, rewarding institutions underfunded according to the historical quota, and leading indeed towards an allocation efficiency. Moreover the budgeting allocation reform makes the Italian HE system internally more competitive for both students and funding, introducing a concrete quasi-market, and encourage Italian state universities to enhance their commitment in graduating students on time.

The paper is organized as follows. The article starts presenting the literature on financial management reforms and the different approaches in making cuts in times of public-spending austerity. The following section introduces the budgeting allocation process and the variations in allocation in HE systems. Then, we turn our focus on Italy. First, we in-depth present the current reform, explaining how the two main aggregate financial lines within the basic operational grant (the base component grounded on the new standard cost per student and the performance-based components) are allocated. Second, we analyze whether the funding reform leads to a redistribution and rebalance of the available public resources to Italian state universities. Finally, we discuss the changes in the Italian HE budgeting allocation policy drawing upon the literature on financial management reforms and on the theoretical perspectives to budgeting allocation in HE systems.

Financial management reforms

The literature on financial management reforms evidences that, in times of public-spending austerity, three different strategies are available in making cuts to public expenditure: cheese slicing, efficiency

gains, and centralized priority setting (Pollitt and Bouckaert 2011). In this paper, we draw upon these approaches, here presented in details, to discuss the cuts in the Italian HE sector.

According to the cheese-slicing approach, the cut is homogenous and egalitarian for all, so operational managers and professional-service delivers are obliged to find ways of reducing their expenditures. In this way, the central authorities are not themselves choosing either which services are going to be cut, or what types of reform are to be implemented, ‘distancing’ the actual selections of cuts from executive politicians and devolving decisions in the hands of those people knowing more about the actual practical details. The cheese-slicing approach is common, and gives to the local managers the possibility to protect core activities and top priorities. However, Meier and O’Toole (2009) stress that this approach applies only in the short run, and some of the actions taken would become more damaging and less sustainable if the cuts continue over a number of years. Moreover, cheese-slicing generates a highly unpredictable and negative environment for operational managers, because they can find to have lost part of their budget for no good performance-related reasons.

A second strategy to budget cut is efficiency saving. This strategy is more compatible with performance improvement and suggests to adopt or increase the use of frame- or block-budgeting. In the past it meant a change from a system in which central agencies had been heavily involved in regulating and controlling individual local services (i.e. through line-item budgets) to a new relationship in which central government introduced frame-budgeting and fixed a formula-determined total. Frame-budgeting requires a redesign of budgetary procedures: firstly, the determination of aggregate financial frames and the choice of which is the most appropriate formula; then a detailed local discussions of what allocations should be to specific programmes.

A third approach is centralized priority setting. It envisages to make cuts strategically and leaves politicians directly in control, with deep cuts in public spending in the sectors which are not regarded as a priority, while protecting others considered more important. It is a strategic prioritization, although, in practice, governments frequently lack the precision control tools to enable them to do so effectively. With this approach, ministers become visibly and directly responsible for painful choices and take decisions with consequences they do not fully foresee, since they are unlikely to understand the internal complexities of the services which are being cut. Some academics have suggested that going from the first to the last is a natural order of business, wherein each stage requires a more sophisticated information base, and a more advanced management capacity.

Budgeting allocation in higher education systems

This section makes a bird's eye view on existing studies on the budgeting allocation, focusing on the procedural and material perspectives, which are those employed in our analysis. Further, the section presents the theoretical approaches to introduce variations in budgeting allocation that are employed in the discussion and conclusions section as lenses to analyze the funding formula reform to allocate the Italian HE basic operational grant.

In its simplest way, budgeting can be defined as a process through which centrally available financial resources are divided among organizational subunits and type of expenditures (Jongbloed and van der Knoop 1999; Ongaro 2009). It involves the decision on the level of expenditures and on the allocation of resources among organizational subunits (Lepori et al. 2013).

In the past, budgets were mainly a process by which annual financial allocations were incrementally adjusted, legalized, and made accountable to legislatures. However, fiscal and budgetary constraints on public expenditure led to an expansion in the scope and purpose of budgeting. Today, it has become a powerful policy instrument to achieve goals linked to a specific agenda and more intimately tied with other processes such as planning, operational management, and performance measurement (Pollitt and Bouckaert 2011).

Also within HE systems, budgeting is a powerful policy instrument: government funding is one of the central policy tools and regulatory mechanisms by which steering and governance take place. Consequently, policy-makers in several countries reformed the nature and the rules to assign public funding to universities, making it increasingly subject to conditions or accompanied by growing accountability requirements (Estermann et al. 2011). It happened because European societies have become less confident in the internal working of universities and in the way they spend public resources. The idea conveyed by governments was that universities were largely ineffective and inefficient (Enders et al. 2011). University funding in Europe has consequently followed an evolutionary trend by placing greater emphasis on issues such as formula funding criteria, competitive funding and revenue diversification (Teixeira et al. 2014), reflecting even in the HE sector the rise of a quasi-market (Le Grand and Bartlett 1993; Le Grand 2006).

Looking closely at how HE institutions are financed, in most countries funding is composed by two main streams (Lepori et al. 2007; Jongbloed 2008). The first one is the *core budget*, whose resources are attributed to the HE institutions as a whole lump-sum and then are internally distributed according to organization priorities. It includes basic operational grant from the State, supplemented in most cases by fees, donations and other general revenues. The second stream is the *third-party funding*, namely resources earmarked to specific activities and subunits. It is generally composed of public research grants, private contract funds, postgraduate fees and other earmarked revenues

(Lepori et al. 2013). Existing studies have tended to give particular attention to the second dimension, namely research funding and its institutional distribution (Teixeira et al. 2014), which can be employed by government to steer at the distance the university research priorities. However, in most European countries, and in Italy as well, the basic operational grant constitutes the largest part of the overall HE budget. Indeed, the level of this grant and the criteria for its allocation are highly relevant for financial sustainability of universities. Accordingly, this paper focuses on the substantive rules through which the most significant part of the budget is allocated among individual Italian state universities, specifically grounding on the procedural, rule-based and the material dimensions evidenced by Lepori et al. (2013) in their literature review of existing studies on the budgeting allocation in HE. Given the centrality of budgeting in the organizational life of universities, they indeed evidenced that its analysis took different perspectives: 1) the material side, 2) the relationship of budgeting to actors and their interests, 3) the procedural, rule-based dimension, and 4) the relationships of budgeting with the broader cultural dimensions and social norms.

The procedural and regulative dimension focuses on the systems of formal rules constraining the decisions of the actors providing a framework within which the behavioral actions adhere. For analytical purposes, this can be distinguished between procedural and substantive rules concerning budgeting. The former focuses on the actors involved and defines the steps through which the budget is elaborated, refined, approved, and finally implemented. The latter focuses on how budget should be divided among subunits and is that taken in our analysis. On the other hand, the material dimension depicts budgeting as a tool to distribute scarce resources. It takes into account the rivalry among institutional subunits vying for scarce resources and for the optimal allocation of resources in order to achieve established goals. According to this perspective, central factor to be taken into account in the analysis of HE system budgeting is the structure of the resource space and the variations in public HE funding. One approach is to highlight the differences in the composition of resources with respect to countries and individual HEIs, related to national-level variations in the composition of funding and ability to attract third-party funds. A second approach highlights the allocation process. Despite wide national differences, comparative studies display a general shift away from soft allocation based on inputs and on political negotiations towards more formalized rules, such as funding formula allocation. Nowadays, this is a widespread allocation method at the level of HE system (Jongbloed 2008). Reale and Seeber (2013) evidenced how this policy instrument evolved, becoming more sophisticated over time. It started considering only simple teaching indicators such as the number of students and production cost weighted by disciplinary field. However accountability concerns have had an impact on the relationship between HEIs and their main financial providers (the state), with the introduction of output criteria in the calculation of funding (Teixeira 2009). Indeed, at this time,

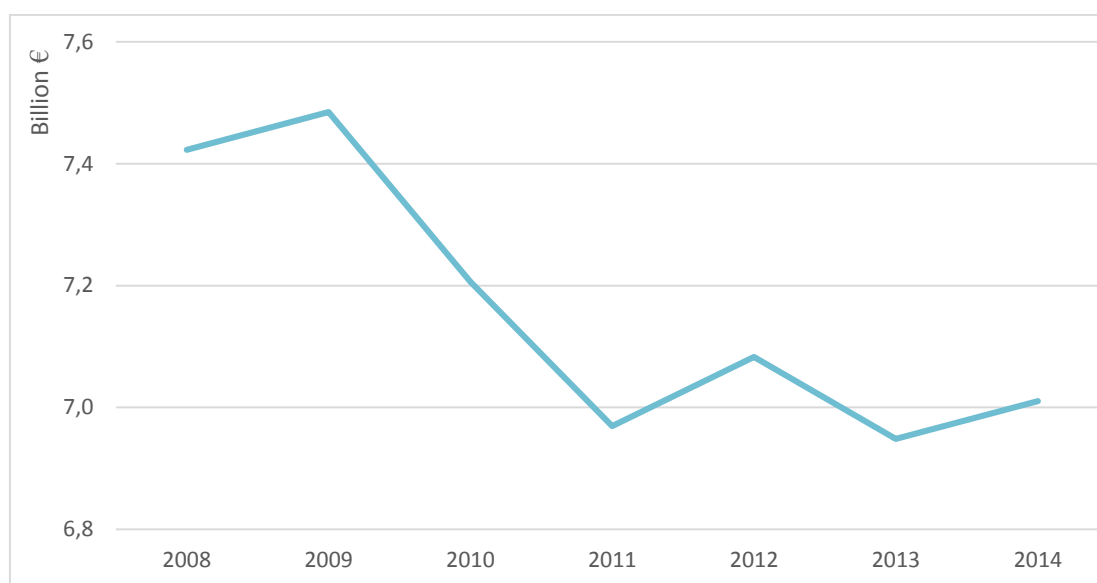
funding formula allocation is based on measures of activities (e.g. student numbers) and, to a less extent, outputs such as research outputs and degrees (Jongbloed 2008). In many countries, also differences across disciplinary and epistemic communities have often been taken into consideration through different levels of state funding per head of student (Lepori et al. 2013; Reale and Seeber 2013).

Modifications to the funding formula are also the mean to introduce variations in allocation rules. Looking at the theoretical approaches to introduce variations in allocation, budgetary research literature evidences two main theories. The theory of (process) incrementalism developed by Wildavsky (1964) refers to a pattern of marginal change in final allocation outcomes relative to some known base, typically the previous budget. This approach provides stable expectations for budgetary decision makers and reduces the burden of analysis for participants in the process (Davis and Greve 1966). An alternative approach is the theory of serial judgment (Padgett 1980). It also starts with a historically given allocation outcome but then systematically adjusts this outcome by cycling through discrete neighboring alternatives. The empirical work by Padgett (1980) suggests that process incrementalism is favoured when overall budget levels must be determined, but the greater flexibility of serial judgment gives superior outcomes when the problem is allocation change. Incrementalism was a fair description of budgetary processes in HEIs until the 1970s. Studies from that period demonstrate that, at least in the short and medium term, past allocation was the best predictor for current level of allocation (Pfeffer and Moore 1980). Since then, however, incrementalism has increasingly come under pressure as a budgeting practice which does not allow efficient and strategic allocation of resources (Massy 1996). There is some evidence that it has been replaced by other approaches, such as rule-based allocation, both in HEIs and in public budgets (Wildavsky and Caiden 2004).

HE Budget Reforms in Italy

This section reports the budgetary procedures in the Italian HE sector. Firstly we look at the choice of the aggregate financial frames by policy-makers, looking comparatively to changes in employees with other public policy sectors. Then, after a brief history of the evolution of the funding mechanism and allocation rules to Italian state universities, we present in-depth the current reform of the funding formula to assign the basic operation grant to the Italian state universities, which has been put into effect in the allocation of the financial resources as of year 2014.

Figure 1 Overall institutional basic funding (FFO) since 2008 (in billion €)



The so-called FFO is the core budget of Italian state universities. It amounts to about 7 billion euros, provides approximately 53 per cent of Italian state university system overall budget (ANVUR 2014) and is assigned by the national government as a block grant. Up to 2008, FFO was increasing in nominal term, albeit in real term it remained quite steady starting from the end of the last century (CUN 2013). Since 2009, both because of the crisis of welfare state due to the huge Italian public debt, of the political disinterest toward the HE sector (Capano 2010) and of the climate of distrust towards the university professor profession (Donina et al. 2015), the government started to reduce the public grants to the HE sector even in nominal terms (Figure 1). With respect to other public policy sectors, education was subject to deeper public spending cutbacks and reduction in the number of employees: -10,9% in schools and -9,4% in the universities from 2007 to 2012, while the average of public administration was -5,6% (Fondazione Agnelli 2014). Within the HE sector, governmental approach to cuts to institutional budgets was made using tolerance bands to restrict losses of the worst performing institutions.

Looking at the allocation mechanisms of public grant to universities, it was modified several times in the last decades. New funding rules for the universities were introduced in the mid-1990s (Law 537/1993 and Law 549/1995). These provisions established the responsibility of the university for the allocation of resources given by the State with a change from line-item to lump-sum budgeting (Capano 2011; Minelli et al. 2012; Reale and Potì 2009). The new budgeting system granted greater room of manoeuvre for the universities, which became responsible for ensuring that the funds covered all the expenses linked to their decision-making (teaching and research activities, personnel salaries,

infrastructure, investments and operational expenditures). Generally speaking, this scheme is still working today with few innovations.

A new funding reform to allocate Italian state universities core budget was approved at the end of the 20th century. A share of 60%, which previously was transferred to universities as a basic rate for research, was included in the FFO, while the remaining share of 40% devoted to funding research, was transformed into the PRIN (*Progetti di Rilevante Interesse Nazionale*), which became the general method for funding university research given the low level of the internal resources and the differing ability of the disciplines to attract external funds (Reale and Potì 2009). Moreover, this reform modified again the allocation rules, introducing a funding formula to assign resources. It was initially composed of simple input parameters and teaching indicators such as the number of students and production cost weighted by disciplinary field. During the years it became more complex, including separate and specific parts for research activity, and output indicators (number and qualification of researchers weighted per disciplinary sector, external funds attracted – Italy 2003; Reale and Seeber 2013). Since 2009, Law 1/2009 inserted a competitive quota in institutional funding through the ‘performance-based component’ within the funding formula. It initially weighted for 7 per cent of the basic operational grant, but increased its share during the following years and it reaches the 20 per cent in 2015. However indicators used to calculate it were also tied to institutional dimension and input information, while the most significant portion of the core budget (more than 80 per cent up to 2013) was still allocated according to the actual and historical expenditures. Anyway, the legalistic tradition of steering by rules, still nowadays strong in the Italian HE sector (Donina et al. 2015), tended to transform the nature of the formula from its original purpose as a steering a distance tool because quantitative evaluation easily turned into overly detailed regulation replicating a bureaucratic approach (Reale and Seeber 2013).

Most recently, a new crucial reform of the funding formula to allocate the core budget (FFO) to state universities was approved within the comprehensive reform of the HE sector governance, the Law 240/2010 (also called Gelmini reform). Regarding budgeting, Law 240/2010 is a delegation law (Ongaro 2009) which indicates the general contents of legislative decrees which have been subsequently promulgated by the government to carry the reform without any further parliamentary passage. The new funding methodology for Italian state universities was put into effect in December 2014 with the issue of ministerial decree 815/2014 and inter-ministerial decree 893/2014. Table 1 summarizes the variations to aggregate financial lines within the basic operational grant between the year 2013 and 2014: the new funding allocation detaches progressively from the old practice mainly based on historical expenditures and becomes more performance-oriented. We now concentrate upon how the two main aggregate financial lines within the FFO are allocated: the base component,

focusing on the innovative ‘standard cost per student’ funding line, and the performance-based component.

Table 1 Institutional basic funding: components (in million €)

FFO Figures	2013	2014	% FFO 2014	Δ 2014-2013
Base component	5,433.1	5,085.7	72.5%	-347.4
Group A	5,235.8	4,912.6	70.1%	-323.1
<i>Standard cost</i>	0.0	982.3	14.0%	982.3
<i>Historical (formula)</i>	5,229.3	3,929.1	56.0%	-1,300.2
<i>Others funds to Group A</i>	6.5	1.2	0.0%	-5.3
Group B and C	197.3	173.1	2.5%	-24.2
Performance-based component	819.0	1,215.0	17.3%	396.0
Equalization component	91.0	105.0	1.5%	14.0
Others	605.1 ²	604.9	8.6%	-0.3
Institutional basic funding (FFO)	6,948.2	7,010.6	100.0%	62.4

Source: Own elaboration on the data from ministerial decrees 700/2013 and 815/2014

1) ‘Standard cost per student’ component

In 2014, a share of 20 per cent of the ‘base component’ of system basic funding (FFO) starts to be allocated on the basis of the so-called ‘standard cost per student’ principle. The Italian state universities participating to the allocation of the public resources according to the ‘standard cost per student’ are 56 (‘Group A’ in ministerial decree 815/2014, Table 1) over 65 institutions to whom FFO is allocated³. It aims to take into account the ability of universities to graduate a student on time.

Formula (1) estimates the expenditure for every university to graduate a student, relying on the costs of academic and non-academic personnel, and on the number of regular (on-time) students. Specifically a regular student is a scholar who is enrolled from a number of years no higher than the expected duration of his degree course. The formula takes into account both full time and part-time students, weighting the latter halves of the former. Regular students are then grouped in three macro-disciplinary areas (medicine and healthcare-M&H, science and technology-S&T, and humanities and social sciences-H&SS). Then, for every university, the formula (1) estimates the cost taking into account the macro-disciplinary areas where students are enrolled, the local economic environment (by region, where the university is located), and university infrastructure (legislative decree 49/2012).

$$(1) \text{ Standard cost} = a + b + c + d + k$$

Where:

a accounts for the cost of teaching and research activities in terms of academic staff. In Italy, academic staff salaries are fixed nationally and uniform across disciplines, depending only on career advancement and seniority. Therefore this parameter considers the standard number of professors and researchers per course (according to the accreditation rules for every course of study established by the Agency for the Evaluation of University System and Research, ANVUR) in relation to the average cost of a full professor in each university. With respect to external teaching contracts, the cost of teaching hours relies on a fixed standard cost in the period 2014-2016 of 132.7 € per hour.

b refers to educational, organizational and technical services, including the provision of technical and administrative staff aimed to ensure support to students' education. The standard cost of such services is assumed to be equal to 27.5% of the average cost of a full professor multiplied for the expected number of professors.

c estimates the average cost per student of infrastructures, operation and management of teaching, research, and service facilities. It is calculated according to the formula (2) which considers a fixed cost for the university and a differentiated cost per student according to the disciplinary macro-areas wherein s/he is enrolled. For the estimation of the parameters, the Ministry of Education, University and Research (MIUR), relies on a plethora of costs, referring to university balance sheets in the 3-years period 2010-2012.

$$(2) \ c = \frac{(2,053,582 + 4,091 * \text{StudM\&H} + 1,669 * \text{StudS\&T} + 570 * \text{StudH\&SS})}{(\text{StudM\&H} + \text{StudS\&T} + \text{StudH\&SS})}$$

d includes further costs quantified according to the macro-field of study. Three different cost sets are considered according to the resources employed in the courses: number of 1) collaborators and language experts; 2) experts in masters or five-years courses (*Ciclo unico*) in primary education sciences and conservation and restoration of cultural heritage; 3) tutors in long-distance learning courses. Every group is associated a cost of 10% of a full professor.

k is an equalization component that accounts for the different local economic conditions of the area wherein the university is located. This parameter is equal for all the universities located in the same region and is calculated as the difference between the standard contribution per student in the region according to national rate and the regional maximum students' contribution. Consequently it weighs 0 € per student for Lombardy (the region with the highest regional average income), while it accounts to more than 300 € per regular student in region such as Molise and Calabria up to a maximum of 412 € per regular student in Sicily.

Table 2 shows the average value for each parameter and its weight over the total estimation of the standard cost. More than half of the total average value (6,557 €) is associated to the cost of teaching and research activities (*a*), while the cost for educational, organizational and technical services (*b*) and that related to the operation and management of infrastructures and other facilities (*c*) weight each more than 22 per cent of the total cost. Finally, the last two parameters account for only low percentages, respectively 0.3 per cent for parameter (*d*) and 2.4 per cent for the equalization component (*k*), even if the latter can account for about 6 per cent of the overall standard cost per student for the universities located in the poorest regions (e.g., Sicily).

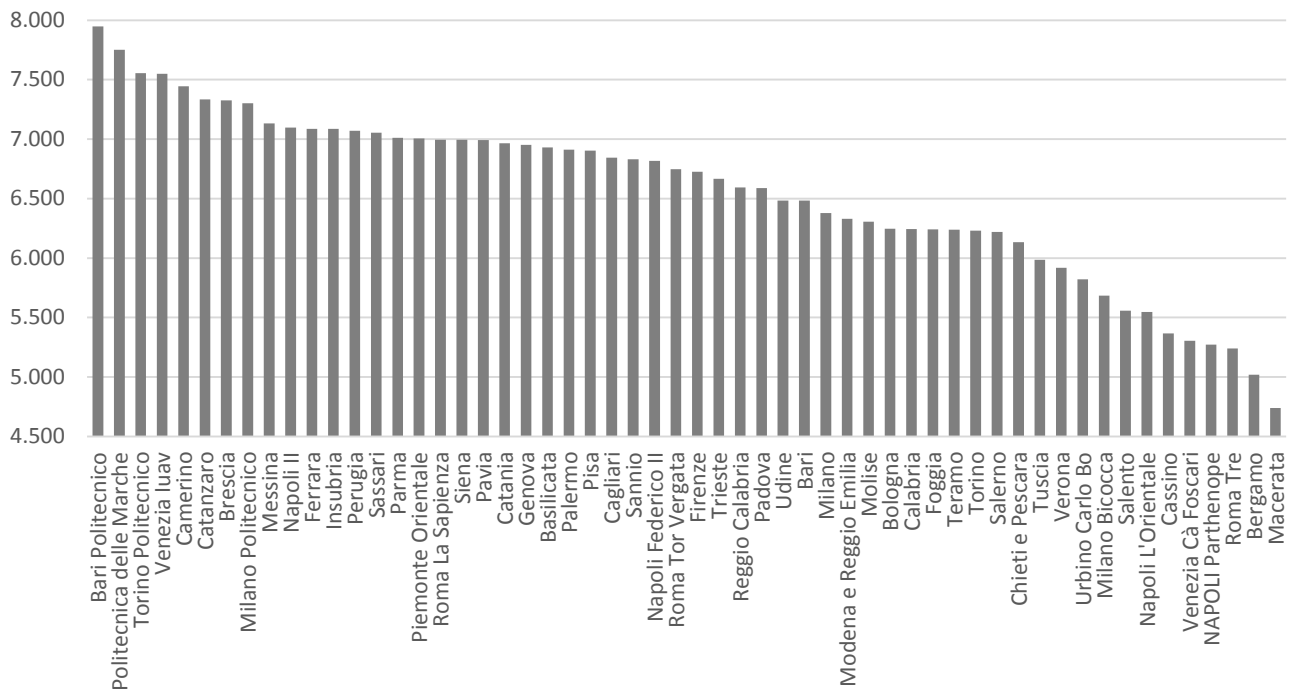
Table 2 Standard cost components value

Standard cost parameters (€)	a	b	c	d	k	Tot
Average value	3,296	1,612	1,469	22	158	6,557
Std. Dev.	327	161	314	24	126	721
Max	3,847	1,883	2,149	156	412	7,948
Min	2,493	1,218	798	0	0	4,739
% Average value on Tot	50.3	24.6	22.4	0.3	2.4	100.0

Source: Own elaboration on the data from inter-ministerial decree 893/2014

In Figure 2 we portrayed the average unitary ‘standard cost per student’ for every Italian state university participating to the allocation according to the new formula. It is possible to observe a high variability among institutions, ranging from a minimum of 4,739 € for the University of Macerata, where the student body is entirely in the humanities-social science area, to a maximum of 7,948 € for the Polytechnic University of Bari where all the students are enrolled in the science and technology area.

Figure 2 Unitary 'Standard cost per student' for every Italian state university



Source: Own elaboration on the data from inter-ministerial decree 893/2014

However, a lower unitary standard cost per student does not mean that a university is more efficient: the value is just due to the distribution of the student body among the three macro-disciplinary areas. This statement is confirmed by the result of the OLS regression analysis reported in Table 3. The model shows that a replacement of one percentage point of students enrolled in the humanities and social sciences with those enrolled in medicine and healthcare (or science and technology respectively) corresponds to an increase in the unitary standard cost per student of 51,6 € (27,3 €).

Table 3 Discipline composition of the standard cost per student

OLS model	Dependent variable: Unitary Standard cost per student
% stud M&H	51.595*** (4.144)
% stud S&T	27.295*** (1.917)
Constant	4,978.579*** (119.959)
Observations	56
R-squared	0.838

***p<0.01, **p<0.05, *p<0.10. Standard deviations in parentheses

The unitary standard cost per student is then employed to calculate the overall standard cost quota of every university. First, the unitary standard cost per student is multiplied by the total number of regular students of each institution to calculate the university total standard cost. Second, it is weighted over the total standard cost of the system (namely the sum of single university total standard cost). This percentage is finally employed to allocate the share of the base component in the funding line ‘standard cost’ (982,3 million € in 2014, Table 1).

2) Performance-based component

A second change introduced in the funding lines within the FFO is that the ‘base component’ of the FFO was decreased (-330 million € to Group A in 2014) and replaced by an increase in the ‘performance-based component’ (+396 million €). The latter relies on output indicators to address performance issues and was assigned according to the evaluation of research quality made by the ANVUR (VQR 2004-2010, 70%), the evaluation of recruitment policies (RP, 20%), and the internationalization (Int, 10%) of every university.

$$(3) \text{ Performance – based component} = 0.7 * VQR + 0.2 * RP + 0.1 * Int$$

Where:

VQR is based on the analysis of the research activity in terms of quality, research attraction, internationalization, highly-skilled human capital education (research fellows and PhDs) and the trend of research performance compared to the previous research assessment (VTR 2001-2003). All these indicators are weighted with respect to 14 scientific-disciplinary areas.

RP considers the evaluation of the research output of academics recruited by universities in the period 2004-2010.

Int evaluates the internationalization of the universities relying on indicators such as the number of incoming and outgoing ERASMUS students (in the academic year 2012-2013), of European Credits (ECTS) accumulated abroad by on-time students (in a.y. 2012-2013), and of graduates in the year 2013 who gained at least 9 ECs in foreign academic institutions.

Similarly to the funding allocation associated to the ‘standard cost’ component, for each of the above indicators (VQR, RP, Int), the performance-based funding component is allocated among institutions considering the weight of each indicator (per university) with respect to the overall funding line (1,215 million € – 18 per cent of the FFO in 2014, Table 1).

Analysis of the Redistribution and Rebalance of the Italian Higher Education Funding

This section assesses whether in the Italian HE system, due to the funding reform, there has been a redistribution of the basic operational grant and whether this redistribution is leading towards equity and rebalance of the available resources among Italian state universities.

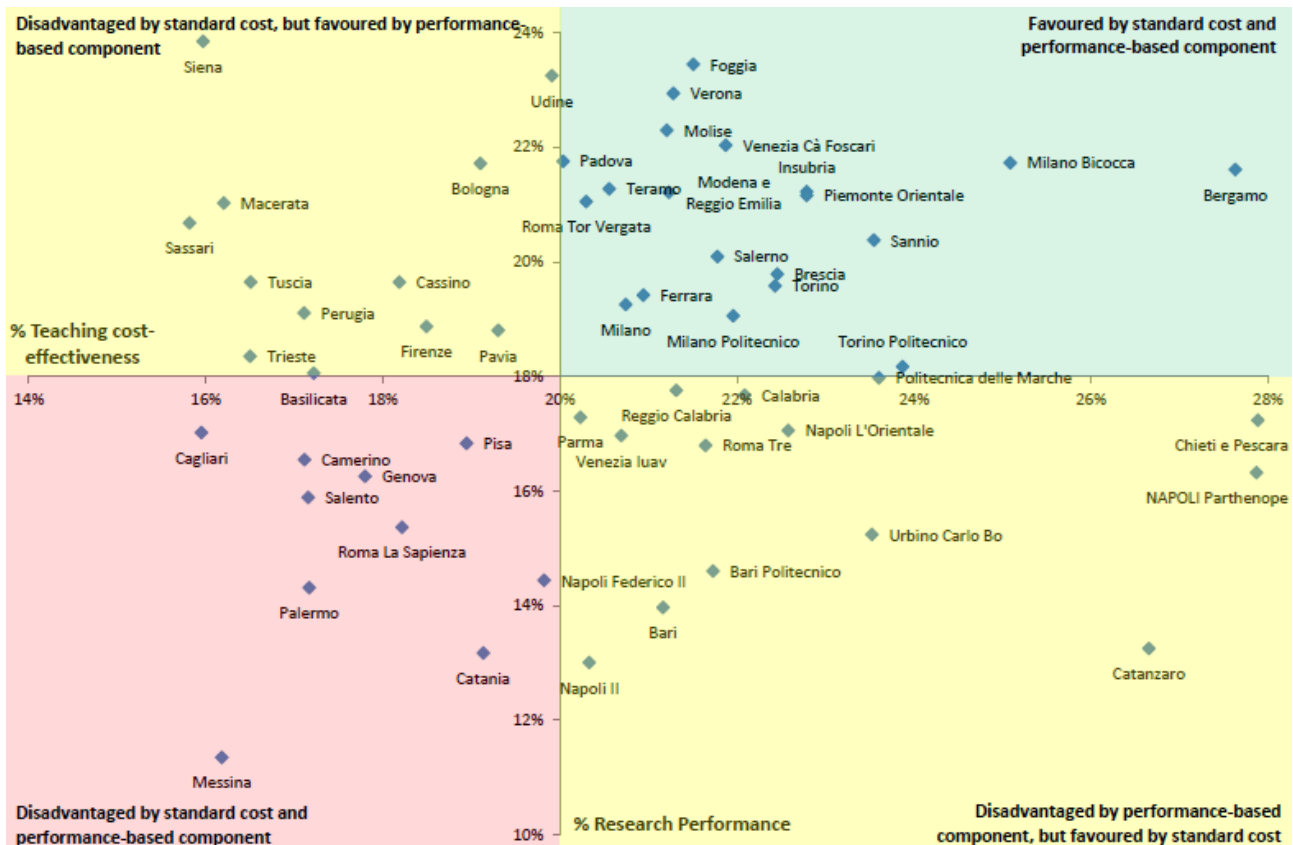
1. Funding redistribution

In this section, we analyze the impact of the new funding formula, focusing on the redistribution and variations for every Italian university participating in the rivalry distribution of basic operation grant of state funds. For this purpose, for every Italian state university participating to the allocation according to the new formula, we built two indicators that allow us to split the impact of the two main components of FFO, the ‘standard cost per student’ and the performance-based component:

- Teaching cost-effectiveness: Share of the institutional basic component of FFO coming from the standard cost.
- Research performance: Share of the performance-based component over overall university basic funding (FFO).

Figure 3 maps the redistribution of financial resources flowing from the central government to individual Italian state universities across four quarters according to the two above-defined indicators. If the change in the allocation formula would not produce any redistribution of state funding among institutions neither for the teaching nor for the research components, the universities would be located at the intersection of the axes (respectively at 20% and 18%). Universities in the top-right quarter (i.e. Bergamo, Milano Bicocca) are awarded receiving more funding both by the standard cost and the performance-based components with respect to the average; those in the down-right quarter (i.e. Chieti e Pescara, Napoli Parthenope, and Catanzaro) are awarded by standard cost but disadvantaged by the research performance component; institutions on the top-left quarter (i.e. Siena, Sassari, Macerata) perform well according to the research component, but receive less funding because of the introduction of the ‘standard cost’ formula; finally, universities on the down-left quarter (i.e. Messina, Palermo) are disadvantaged by both components. The figure seems to suggest a geographical bias in the standard cost formula because most of the universities poorly performing are located in the Centre and South regions of Italy, which are comparatively economically disadvantaged with respect to the North.

Figure 3 Institutional positioning according to teaching cost-effectiveness and research performance indicators



2. Assessment of rebalance in state funding

This section tests whether the teaching cost-effectiveness indicator is leading to an equity and rebalance of the institutional budgets. For this aim, we investigated whether student enrollment variations in the previous academic years (since the beginning of financial crisis) is a determinant of the teaching cost-effectiveness indicator. Under the previous regulatory framework the FFO was indeed mostly distributed to universities based on a historical basis, it considered only marginally the variations in the number of enrolled students in the allocation of public sources. We first argue that, after the introduction of the new standard cost per student, universities which registered a growth in student enrollments in the previous years are advantaged receiving more state funding, while those with declining trend are disadvantaged. Second, since Figure 3 seems to suggest a geographical bias, we test whether the location of the university might affect the standard cost allocation. Finally, given the fact that the new funding formula progressively detaches from historical allocative basis, we expect that older universities receive relatively less funds compared to the younger institutions, which were disadvantaged by previous allocation formula, based on incremental adjustments of historical funding.

Relying on the sample of the 56 Italian state universities participating at the allocation according to the new formula, we used an Ordinary Least Square (OLS) regression model with robust standard

errors to test whether 1) the percentage variation in students enrolled over the period 2008/2009 - 2012/2013 (relying on data from *Anagrafe Nazionale degli Studenti Universitari-Ufficio di Statistica MIUR*); 2) the location of a university, creating a set of three dummies for the universities located in Northern regions (21 universities), in the Centre (13) and in Southern regions (22), defined relying on the ISTAT (Italian National Institute of Statistics) classification of macro-areas (North, Centre, and South)⁴; 3) the age of the university, measured as difference in years between 2013 and the year of foundation, are determinants of the teaching efficiency indicator. Multicollinearity is not a concern because the variance inflation factor does not exceed two, which is below the critical cut-off of ten.

Table 4 Determinants of the teaching efficiency indicator

OLS model	Dependent variable: Teaching cost-effectiveness
$\Delta\%$ enrolled students (2008/09 – 2012/13)	0.163*** (0.040)
Centre	0.000 (0.009)
South	0.009 (0.011)
Age (2013 - Year of foundation)	-0.039*** (0.009)
Constant	0.226*** (0.006)
Observations	56
R-squared	0.392

***p<0.01, **p<0.05, *p<0.10. Standard deviations in parentheses

The results of the regression analysis (Table 4) evidence that the variation in enrolled students in the period before the implementation of the standard cost formula is positively correlated to the teaching indicator at 1% significant level⁵. As expected, this finding suggests that growing universities have taken advantage of the standard cost formula, leading to a rebalance in the state-funding allocation. Further, the model shows older universities significantly raise less funding associated to the standard cost component (negative coefficient, at a 1% significant level), while no differences in the allocation of this component is related to the location of the university: taking into account the latest trend in students enrollment, universities located in the Centre and in the South do not present significant differences in the share of public money coming from the ‘standard cost’ component compared to Northern institutions.

Discussion and conclusions

In the light of the approaches in making budget cuts evidenced by the literature on financial management reform and that on variations in budget allocation, this section summarizes and discusses the main results of our analysis.

The budget of the Italian higher education sector started to be reduced in nominal terms since 2009. Compared to the other public policy sectors, it was subject to deeper cutbacks as revealed by the greater reduction in the number of employees compared to the other public services. Looking at the governmental choice through a financial management reform lens, it reflects a centralized priority setting strategy, where the HE sector is not regarded as a priority by the policy-makers. This decision was eased even by the climate of distrust which surrounded HE in the public opinion. Within this public policy sector, the first reaction to budget constraints was to make cuts using tolerance bands to limit losses of the worst performer institutions, making resource reduction quite homogenous and egalitarian. It corresponds to a ‘cheese slice’ approach to university budgets. However, the funding reform, provided for by the Law 240/2010 and enacted by the legislative decrees promulgated just in December 2014, introduced a deep change in the funding allocation mechanism. It required a redesign of the formula to allocate the national core budget distributed by block grant to Italian state universities, considering the expected cost per regular student for every university. The standard cost indeed relies on the concept that every Italian state university presents a cost per student influenced just from the student body partition among disciplines, since all the other costs, included academic personnel wage which is the most relevant cost item, are nationally established and uniform across disciplines in Italy. The new approach to funding policy is more compatible with an ‘efficiency gain’ strategy, following the ideology of ‘to do more with less’ and attempting to make efficiency savings, while bringing equity within the system.

An important novelty introduced by the new funding formula is that it starts to allocate public resources taking into account the number of regular students instead of the overall number of enrolled students. This choice aims not only to modernize the financial control system, but it also expresses a broad political and strategic priority through resource allocation: considering the number of regular students into the substantial rules to allocate the highest share of public grants, the funding formula highlights the political priority to graduate students on time, encouraging Italian universities to enhance their commitment in reaching this goal. In that sense, the standard cost reform is a performance-related funding policy which introduces a concrete quasi-market into the Italian HE sector: competition for attracting students among Italian universities is no longer motivated only by tuition fees as it was in the last decades (Cattaneo et al. 2015). However we believe that rewards in the future should not only be related to quantity, but also incentives related to the quality should be

considered into the formula to avoid a race just to growth. At the same time, as a result of the reform, the cost of the students who take longer than the expected duration of their course is no longer covered by public purse, but it is entirely shifted to their own tuition fees (it became possible only after the issue of the Law 135/2012).

This paper demonstrates also that the new funding formula is leading to an effective redistribution and rebalance of funding, starting to flatten the differences originated by the old allocation mechanism mainly based on the historical quota. Our empirical analysis documents that the budgeting reform leads to an increase of the block-grants assigned to universities which presented a growing enrollment trend in the latest years, which was only marginally taken into account in the previous allocation method. The introduction of the ‘standard cost’ formula indeed rewards institutions which were underfunded according to the historical quota, promoting equity within the system. To this extent, the reform, both introducing the standard cost and increasing the performance-based component, makes the Italian higher education system internally much more competitive for both students and funding. A second important result of this paper is that the new funding formula is not significantly biased by any geographical cluster as universities located in the poorest regions are not disadvantaged by the new budgeting allocation formula.

Looking at the changes in the funding policy into the HE system from the budgetary research literature perspective, the Italian allocation reform represents a profound change in the funding philosophy. Adopting the new funding formula, policy-makers abandon the theory of instrumentalism (for which only marginal change in final allocation outcomes occurred compared to previous year budget), while they embrace the theory of serial judgment budget: starting with the historically given allocation outcome (the previous year ‘base component’), the MIUR, according to its General Director declaration, is out to systematically adjust allocation findings in the next years, incrementing the weight of the standard cost component until the whole ‘base component’ of FFO will be allocated according to the standard cost formula in a few years. Although the current formula can be subject to alterations and improvements of the indicators employed, if the overall design will be confirmed, when the transition period is completed, Italian state universities will be funded for what they are and do, no longer for what they were. In fact, while in the first year of its introduction, the standard cost rewarded underfunded institutions, in the future the standard cost formula will reward also the universities which will be increasing the enrollments. However, in order to make the new allocation rules sustainable during its implementation phase, it is necessary both gradualness in the transition to the new funding formula; that overall available resources in forthcoming years will be at least stable not to penalize further institutions not performing well; and that universities are provided the managerial tools to manage the shocks: i.e. incentives to mobility of staff within the Italian HE system

would facilitate the transition, as the layoff of tenure staff just for financial reasons is not provided for by Italian public sector law.

While the findings of this article are in the context of institutions of HE, they could be highly relevant also for other Italian public administration sectors. In fact, discussions about the introduction of standard cost criteria in other arenas of public policy (i.e., healthcare) are high on the Italian government agenda⁶. Therefore, the HE sector could become the pilot case-study to test new budgeting policy design and lead the way to similar patterns of systematic calculation of the unitary cost per “product” to allocate the public budget in other public policy sectors.

Finally, our paper opens avenues for future research. Since new funding allocation will affect universities’ internal policies, future works could explore which strategies Italian universities act out and analyse the impact of the current reform on the internal budget distribution and on institutional hiring decisions. Further, future research could explore how the positioning of Italian universities will change in the race for public sources over time.

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Notes

¹ In the health care sector, discussions about its introduction are long since, but the resources made available at the regional level are based on the overall need for healthcare in each region and past spending, without relying on standard costs criteria (Francese and Romanelli 2014)

² We added 253.5 million euro among the ‘Other funds’ in 2013 since the corresponding funding lines were incorporated into the overall FFO in 2014 (Law 98/2013, article 60)

³ Five state universities specialized in doctoral training, the two state University for foreigners, the University of the Foro Italoico specialized in Sport training (Group B), and the University of Aquila (Group C) receive the base component of FFO based on a specific agreement with the Ministry of Education, University and Research (MIUR)

⁴ Northern macro regions are taken as the reference case in the regression model.

⁵ Our results are confirmed broadening the period considered for variations in enrolled students (result not shown, available on request).

⁶ Declaration of the Italian Prime Minister Matteo Renzi on 11th April 2015 (see http://www.quotidianosanita.it/governo-e-parlamento/articolo.php?articolo_id=27178)

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