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**Article**

## Local Responses to a National Productivity-Enhancing Reform

CESifo DICE Report

**Provided in Cooperation with:**

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*Suggested Citation:* Bonesrønning, Hans; Iversen, Jon Marius Vaag (2016) : Local Responses to a National Productivity-Enhancing Reform, CESifo DICE Report, ISSN 1613-6373, ifo Institut - Leibniz-Institut für Wirtschaftsforschung an der Universität München, München, Vol. 14, Iss. 1, pp. 61-66

This Version is available at:

<https://hdl.handle.net/10419/167251>

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## LOCAL RESPONSES TO A NATIONAL PRODUCTIVITY-ENHANCING REFORM

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### Introduction

Economists and political scientists agree that public sector reform implementation faces a basic challenge: the gainers from status quo are often politically “strong”, and the losers are politically “weak” (see for instance Fernandez and Rodrik 1991; Moe 2003). That is, a reform that has made it through the political process will not have the intended effects if the reform elements supported by powerful groups and institutions are more likely to be implemented. Looking to research literature on this topic for empirical evidence on reform implementation does not yield much information. This article seeks to fill in that gap to some extent by reporting results from analyses of the implementation of a national educational accountability reform introduced to the federal governing system of Norway.

The reform, unanimously decided in parliament in the period 2003–2006, has two major components. There is a federal part: about 430 municipalities, who are responsible for running their own elementary and lower secondary schools subject to national laws and regulations (almost 98 percent of the elementary and lower secondary schools are public schools), were encouraged to substitute local accountability systems for their long-existing, input-oriented governing systems. And there is also a national part: tests in mathematics, and reading in Norwegian and in English administered at the national level were introduced – firstly in 2004, followed by their withdrawal in 2005 and their reintroduction in 2007. The tests met with resistance; primarily from the

teachers’ union, and the government decided that school average test results should not be made public. However, newspapers have used their freedom of information to publish the results on a regular basis, changing the informational environment everywhere and independent of the municipalities’ responses to the reform.

By design, the intention of the reform – improvements in student performance – can be achieved by mobilizing two different types of disciplinary devices; the institutions of direct democratic control and better informed parent-demanders in the market. The teachers’ union has not been able to hinder the disclosure of national test results. The discussion below begins by investigating the implementation of the federal part of the reform. The question is whether the gainers from the status quo were able to hinder the reform of local governing systems. Thereafter we seek to evaluate reform effects and likely mechanisms. Did student performance and the productivity of the education sector improve? If improvements occurred; which were the important mechanisms at work?

### Reform of local governing systems<sup>3</sup>

A survey of the chief municipality executives is used to gather information on the reform’s implementation status around three years after it was passed by parliament. The accountability reform features the decentralization of decisions on hiring teachers, resource allocation, teaching organization and several other issues, in addition to arrangements to hold school leaders accountable for student performance from the municipal level to schools. We capture the degree of the reform’s implementation with a decentralization index – measuring the degree of decisions decentralized from the local council to the schools, and an accountability index – measuring the degree to which the school principals are held accountable for student performance. A reform implementation index (standardized with mean zero and standard deviation one) is generated by adding the two indices. The distribution of reform implementation across the municipalities is portrayed in Figure 1.

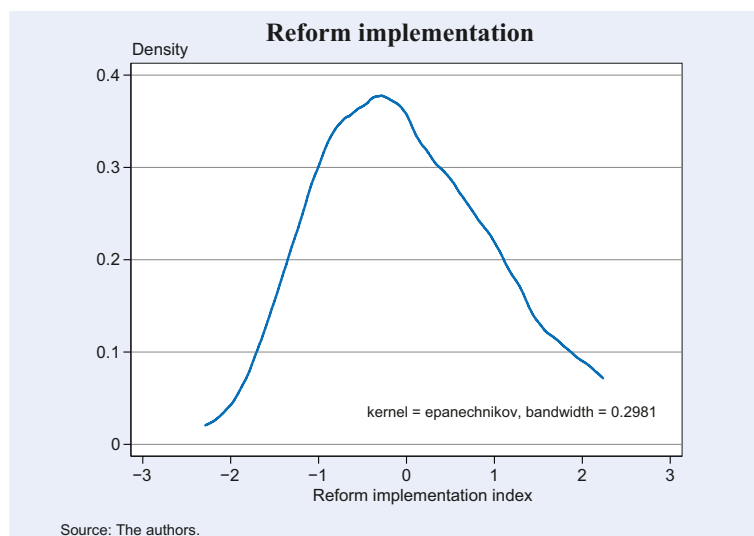


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<sup>3</sup> This section is based on Bonesrønning (2013).

Figure 1



Reform implementation across the municipalities varies significantly. Quite a large number of municipalities have made some changes in the governing systems, more so with respect to the decentralization of decisions than with respect to accountability, while a few have decentralized decisions *and* established explicit accountability arrangements for the school leaders.

The variation in local accountability systems across the municipalities is analyzed from the political economy perspective. The argument goes like this: local councils decide on local governing systems consistent with the opinions of the local electorate, which comprises of gainers and losers from the status quo. The teachers are the main gainers from the status quo; basically because they have earned informational rents in input-oriented governing systems. Teachers seek to protect their rents by voting for politicians who oppose accountability systems. In addition, all public employees, including teachers, realize that they can influence the preferences of their own employers by voting. Thus, we measure the power of the gainers from the status quo by the proportion of public employees in the municipality. Regrettably, this measure is a crude characterization of the gainers from the status quo. Many public employees have their own children in the local schools, and non-teachers may prefer the reform because it improves school quality at no additional personal costs. It should be noted that we were unable to separate out these subgroups. The losers from the status quo are parents and local businesses that suffer from poor student performance and poor productivity in the educational sector. Following a widely-applied assumption in the economics education litera-

ture – that the demand for school quality increases with levels of parental education – the power of the losers from the status quo is measured by the proportion of highly-educated citizens.

It turns out that reform implementation is negatively correlated with the proportion of public employees, and positively correlated with the proportion of highly-educated citizens in the municipality. An instrumental variable approach, using the variation in the proportion of public employees, originating from the fact that national grants to municipalities are based on non-

manipulative municipality characteristics, reveals that the relationship between reform implementation and the proportion of public employees might be causal. The exact size of the effect is hard to pin down; and also hard to make sense of. Nonetheless, the following indicates that the effect is substantial: one standard deviation in the proportion of public employees is transformed into 0.2–0.3 standard deviations in reform implementation. The reported evidence is consistent with the hypothesis that public employees, at least to some extent, are able to block a proper implementation of a productivity-enhancing reform.

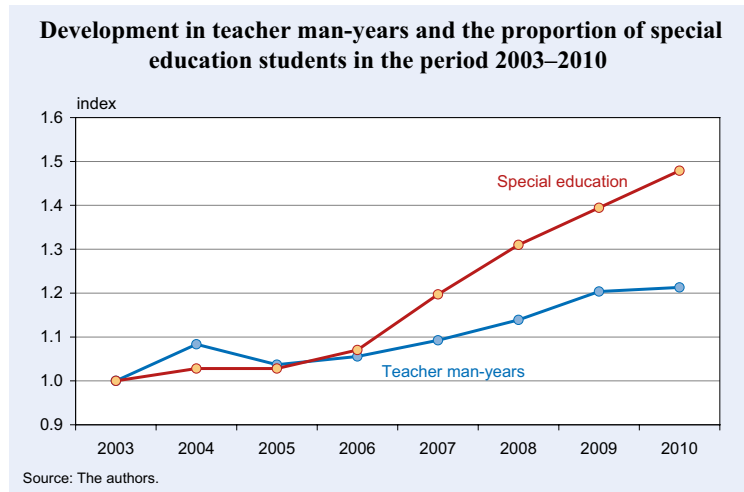
These analyses have some limitations. Firstly, they rest heavily on survey data collected from the municipalities at one point in time, implying that nothing can be said about the dynamics of reform implementation. Moreover, the analyses do not reveal whether reforms, when properly implemented, have generated the expected positive effects on student performance. For these reasons we performed a complementary analysis whereby a reduced-form approach is used to investigate the relationships between student performance, resource use, and the characteristics of the inhabitants in the municipalities. In other words, our analyses are based on data for easily observable inputs and outputs, and not on the survey information about reform implementation.

**Are post-reform changes in resource use correlated with population characteristics?<sup>4</sup>**

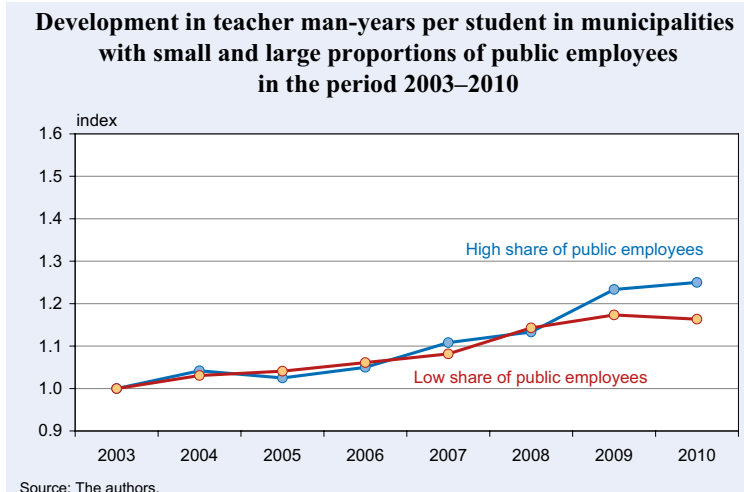
An implicit assumption in many education accountability reforms is that improvements in student performance can be achieved without increasing the amounts of purchased school inputs. However, teachers might have responded to the disclosure of national test results by increasing their demands for additional school resources, notably for more teacher man-years. The probability of their success depends on the composition of the local council. We investigate the hypothesis that post-reform resource use in schools has increased more in municipalities where the gainers from the status quo are strong and the losers are weak.

Elementary schools employ ordinary teachers, special education teachers and teacher assistants. A large increase in the numbers of teacher assistants is a salient feature of the post-reform period, but it turns out that the extended use of assistants does not differ across the municipalities according to the composition of the electorate. The two other components are more interesting from our perspective. The number of special education teachers increased, but not much. However, the number of special education students increased significantly; and was largely financed by cutting back on the average treatment per special education student. These features reflect the fact that many municipalities introduced fixed special education budgets in the post-reform period. It is fair to say that the quite dramatic changes in

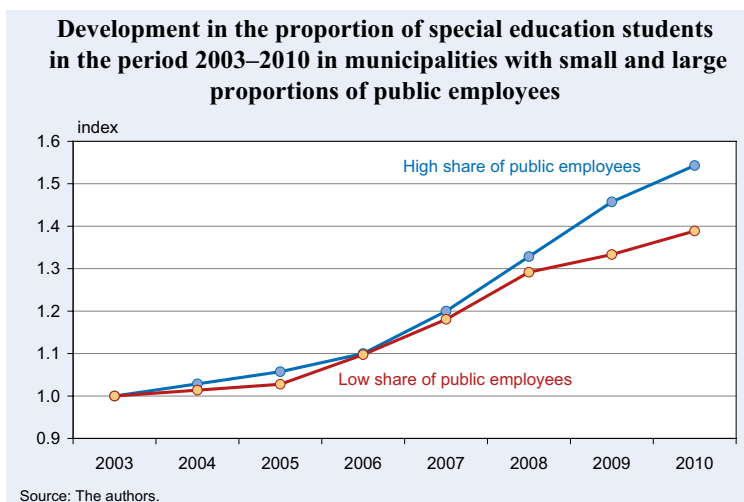
**Figure 2**



**Figure 3**



**Figure 4**



<sup>4</sup> The rest of this article is based on Bonesrønning and Iversen (2015).

the allocations of the special education budgets were not anticipated by any of the players in the education sector. The increase in the proportion of special education students is highlighted below, together with the development in the number of ordinary teacher man-years.

Figure 2 portrays developments in the use of ordinary teacher man-years per student and the proportion of special education students for the period of 2003–2010. Both measures are standardized to give them a value equal to one in 2003. From 2005 onwards the use of teacher man-years per student has increased more or less steadily, as has the proportion of special education students. In our context, the most interesting question is whether the growth rates differ substantially across the municipalities.

The cross-municipality variations in resource-use responses in the post-reform period are illustrated in Figures 3 and 4. These figures are based on a rough dichotomy of municipalities; with the two groups containing municipalities with proportions of public employees below and above the population average respectively.

Figure 3 shows that the 20 percent increase in ordinary teacher man-years per student in the period 2003–2010 is unequally distributed across the two types of municipalities. The growth is 25 and 16 percent respectively in municipalities with large and small proportions of public employees. There are no discrepancies in the development in the teacher-student ratio across the two categories of municipalities up until 2008, but from 2008 and onwards the teacher-student ratio increases more in those municipalities with relatively large proportions of public employees. Figure 4 conveys very much the same message for the proportion of special education students: an increase for both categories of municipalities throughout the period, with the increase being larger in municipalities with a high proportion of public employees, especially from 2008 onwards.

Regression analyses are used to investigate whether the changes in teacher man-years and the proportion of special education students in the pre- and post-reform periods are correlated with the characteristics of the electorate. These analyses show that there is no relationship between the two measures of resource use and population characteristics in the pre-reform period. In the post-reform period there are positive and statistically significant correlations between the two measures of resource use and the proportion of public employees, while there are no significant correlations between the

two measures of resource use and the proportion of highly-educated citizens.

These findings are consistent with the hypotheses that teachers increased their demands for more resources in the aftermath of the reform, and that they were more successful in their endeavors in municipalities where proper accountability systems are not established.

The changing roles of school principals might be essential in this respect: accountability systems generate more information and redistribute power from teachers to school principals. Thus, in an accountability system a school principal tends to be more of a representative for the municipal council, and less of a spokesman for teachers. The finding that schools in municipalities with a large proportion of public employees tend to spread special education resources thinly across many students can be interpreted within this framework. Faced with school fixed budgets, individual teachers have incentives to campaign for more special education resources for their own classrooms. The easy way out for a (weak) school leader faced by informational asymmetries, is to allocate some special education resources to all classrooms.

A striking feature conveyed in Figures 3 and 4 is that all types of municipalities experienced growth in resource use in the post-reform period. The losers from the status quo might hold the key. Their likely response to the disclosure of national test results is to increase their demand for school quality (directed at both schools and municipalities) – either by strengthening their requests for accountability, or by joining the teachers in their demand for more resources. A distinct Norwegian institutional feature encourages the “more-resources solution”: multi-purpose municipalities are financed by grants and local taxes with fixed tax rates, implying that an increase in school expenditure is financed by cutting back on inputs to other municipality-provided private goods. More school resources come at zero prices for parents. Thus, the losers from the status quo might be “weak” for at least two reasons. Firstly, they might not be well informed about the resources-performance relationship, and in addition, Norwegian parents have no pecuniary incentives to object to teachers’ demands for more resources.

### Are post-reform changes in student performance caused by changes in resource use or by institutional changes?

The analyses presented above provide evidence that local accountability systems are more likely to be installed in municipalities with a small proportion of public employees and a large proportion of highly-educated citizens; and that more resources are allocated to schools across all municipalities, with the largest growth taking place in municipalities with a large proportion of public employees. These patterns are consistent with the hypothesis that crucial reform elements are less likely to be implemented in municipalities where the gainers from the status quo are politically strong.

The fundamental questions in education reform evaluations are whether student performance improves, and, in cases where improvements are observed; whether these improvements originate from elements in the accountability reform. We would like to turn to these questions now, although we begin with an apology that we have been unable to address these issues as thoroughly as we would have liked to. Major reasons are that no information about student performance existed prior to the introduction of the national accountability reform, and that no counterfactuals are available.

Initially we report results from analyses where we have investigated the correlations between the *change* in student performance across the municipalities from 2007 to 2010 (as measured by national test results) and the *changes* in resource use in the same period. Ideally, we would like to include measures of the *change* in local accountability systems in the same analyses, but there are no ways that we could generate credible measures for the change in governing systems across municipalities with the available data. Instead, we have estimated (reduced form) equations with the change in performance against municipality population characteristics, and a “hybrid” equation whereby the change in performance is regressed against the change in resource use and (constant) municipality population characteristics. The latter specification is included to investigate whether population characteristics matter for student performance growth beyond the influences mediated through the “resource channel”. In all equations that include population characteristics among the explanatory variables, the initial 2007 level of student performance is also included as an explanatory variable. This is to take into account that some population subgroups may also have influenced school quality prior to the accountability reform.

### Resources and performance

These analyses provide no evidence that an increase in teacher man-years is transformed into better student performance in the post-reform period. This finding, which should come as no surprise to readers familiar with the education production function literature, implies that many municipalities, and especially municipalities with a high proportion of public employees, experienced productivity decline (lower student performance per euro) in their schools in the post-reform period – all else equal.

There is significant evidence that the change in performance for ordinary students is negatively correlated with the change in the proportion of special education students: in schools that experienced a large increase in the proportion of special education students, the performance of ordinary students deteriorated. We know that an increasing number of special education students are financed by cutting back on the number of hours in special education per eligible student. Using the number of hours in special education per eligible student to characterize the development of special education we find – as expected – that the change in the number of hours in special education per eligible student is positively correlated with the change in performance for ordinary students. Taken at face value, these findings constitute another reason for the deterioration in student performance in municipalities with a large proportion of public employees.

But do these findings make sense? In one interpretation, they tell us something about optimal resource allocations: improvements in the learning environment for ordinary students are largest when special education resources are concentrated among a few students. There is substantial international empirical evidence that individual student performance is negatively affected by the presence of misbehaving classmates (see for instance Figlio 2007; Fletcher 2010), and we know that a substantial proportion of “newcomers” to special education in the Norwegian elementary schools in the period after 2006 are misbehaving students associated with negative classroom externalities. More special education resources may offset such negative externalities, especially if the special education resources are directed at a small group of the most seriously misbehaving students, rather than spreading these resources thinner across many students with less serious behavioral problems.

Alternatively, these findings may also tell us something about the importance of governance and management. As pointed out above, weak school principals cannot prevent special education resources from being spread thinly. That is, they cannot stop teachers from engaging in a fight for their part of the school's special education budget. At the same time, weak school principals might be incapable of installing high-quality teaching for ordinary students. In other words, the correlation observed between the allocation of special education resources and student performance is due to a third factor – the quality of school leadership – which, in turn, reflects the quality of the local governing system. Unfortunately, at the present stage we cannot tell which interpretation is most likely.

### *History and performance*

Assuming that education-oriented citizens have “always” voted for education-oriented politicians and have acted as demanding customers for schools, those schools in municipalities with a large proportion of such citizens have been under pressure to perform for a long time. The implication is that there might be less “low-hanging fruit” to harvest for the schools in such locations in the post-reform period, and the disclosure of very good national test results keep their customers satisfied. In municipalities where schools performed poorly prior to the reform, the potential stigmatization following the disclosure of national test results might provide the necessary incentives. Some improvements can be gained quite easily by focusing on basic skills and test preparation. Consistent with this line of reasoning, we find that a low level of pre-reform student performance is associated with high performance growth in the post-reform period. We should hasten to say that, in these analyses, pre-reform student performance is captured by the 2007 national test results.

### *Population characteristics and performance*

When controlling for the pre-reform level of student performance, it is evident that the post-reform change in student performance is largest in municipalities characterized by a large proportion of highly-educated inhabitants and a small proportion of public employees. These relationships hold both with and without controls for the change in resource use. Recalling that local accountability systems reflect population characteristics,

we interpret these findings as potentially showing the (disciplinary) effects of accountability systems.

### **Conclusions**

The evidence presented above can be read in many ways. From a political economy perspective, it illustrates that the impact of a national reform tends to vary across lower tiers in a federal system due to the “non-neutrality” by which the gains and losses from the status quo are distributed. Read this way, it serves as a reminder for policymakers: national reforms should include elements that empower the losers from the status quo. It also acts as a reminder for researchers: unless political economy issues are addressed, evaluations of national reforms might be seriously flawed. The lack of any positive effects *may* be due to poor reform design, but could also be due to improper implementation of the reform.

Readers mainly interested in education issues should note that the two reform elements – local accountability systems and national tests – may prove a fruitful combination. Schools located in “education-oriented” municipalities might improve due to the discipline introduced by the accountability system, while schools in less “education-oriented” municipalities might improve due to the stigmatization effects associated with the disclosure of national test results.

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