

Incentives and effort in the public sector: Have US education reforms increased teachers' work hours?

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Abstract

Beyond some contracted minimum, salaried workers' hours are largely chosen at the worker's discretion and should respond to the strength of contract incentives. Accordingly, we consider the response of teacher hours to accountability and school choice laws introduced in US public schools over the past two decades. Total weekly hours of full-time teachers have risen steadily since 1983 by about an hour, and after-school instructional hours have increased 34 percent since 1987. Average hours and the rate of increase also vary widely across states. However, after accounting for a common time trend in hours, we find no association between the introduction of accountability legislation and the change in teacher hours. Education reforms are, however, associated with an increase in student test scores, presumably due to other types of changes in school and teacher behavior.

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1. Introduction

Among salaried workers, the decision to supply weekly work hours beyond some nominally contracted amount is generally left to the employee's discretion. Thus, salaried workers' weekly hours play a role analogous to that of effort in principal-agent models: an increase in the strength of performance incentives in the employment contract should raise the equilibrium level of hours worked.

In recent years, partly in response to concerns that public schools and their teachers faced inadequate incentives to improve student performance, states have passed a variety of accountability and school choice laws. These include mandatory testing of students with scores publicly reported by school, sanctions for schools with low student performance, rewards for schools with high (or improved) student performance, and charter school laws. States introduced these education reforms asynchronously, thus providing a promising "natural experiment" for evaluating their effects. The goal of this paper is to ascertain whether these laws increased the hours worked by full-time public school teachers.

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Understanding the effects of reforms on teacher hours adds an additional perspective to the burgeoning literature examining their effects on student performance.¹

Using data from the Current Population Survey (CPS) from 1983 to 1998, and the Schools and Staffing Surveys (SASS, waves 1987 through 1999), we show the following. First, the usual weekly hours worked by full-time teachers and after-school instructional hours increased steadily over this period of expanding educational reform. Second, long-term increases in neither of these variables are well explained by changes in the composition of the teacher work force. Third, while pooled regressions across years and states suggest positive effects of accountability and choice reforms, common time trends in hours and reforms drive these results. After including either year fixed effects or state specific time trends, we find that observed hours increases were no greater in states that adopted reforms than in states that did not.

Finally, to help interpret these findings, we connect our state-level reform measures with information on test scores from the National Assessment of Educational Progress (NAEP). While this may not be the ideal way to study the connection between reforms and student performance, we find that several of the reforms studied *are* associated with improvements in students' test scores in our data. This suggests that the reforms may have increased the efficiency via which teachers transform their work hours into students' test performance.

2. Trends in teacher hours

Our analysis focuses on two distinct measures of teacher work hours, taken from different data sets. One measure, taken from the Current Population Survey Outgoing Rotations, is the total number of hours worked in a usual week at a respondent's primary job. This includes both hours spent in the workplace and at home, and excludes hours worked on other jobs.² The second measure is taken from

¹See for example Ladd (1999), Grissmer, Flanagan, Kawata, and Williamson (2000), Glewwe, Ilias, and Kremer (2003), Murnane and Levy (2001) on the impact of accountability reforms; Hanushek, Rivkin, and Kain (2003) on the impact of charter schools.

²Conveniently, the interviewing instructions explicitly refer to teachers as an example, and state that the hours they spend grading and preparing lessons at home should be counted along with hours at school.

the Schools and Staffing Survey (SASS). The SASS is a survey of public and private school teachers administered in 1987, 1990, 1993, and 1999.³ This survey includes a question about the number of extra instructional hours spent by teachers after school *without* students preparing lessons, grading, and in other instructional activities. These hours seem more likely respond to incentives based on students' academic performance than hours spent after school coaching or running the yearbook, or hours that are determined by the length of the school day.⁴

To avoid conflating different levels of teacher effort with the mix of part and full-time teachers, the CPS sample is restricted to teachers employed 35 or more hours a week and the SASS sample to teachers with full-time appointments. Both samples only include public elementary and secondary school teachers. The CPS sample is also restricted to salaried individuals aged 22–61 with no self-employment income, who were not in school, who have at least a bachelor's degree, and to interviews in September through May to avoid typical vacation months. Washington, DC is excluded because several of the sources for educational reform policies excluded it in their reports.

In the CPS, pooling four adjacent sets of years (1983–86, 1987–90, 1991–94, and 1995–98) yields a sample of between 9000 and 11,000 teachers in each of those four periods. These data show a fairly steady increase from about 43 hours in the early 1980s to about 44 hours in the late 1990s. The SASS, which covers over 19,000 teachers in each of four individual years (1987, 1990, 1993 and 1999) shows that extra instructional hours have risen steadily from 7.18 hours in 1987 to 9.63 hours in 1999. More details of these trends and means of all characteristics are provided in Stoddard and Kuhn (2006).

Both surveys also show that the level and change in hours varied significantly across states, suggesting a possible role for legislative effects. Fig. 1 plots the average number of hours worked in the early 1980s in each state against the number of hours worked in the late 1990s as reported in the CPS. States along the 45° line experienced no change in mean teacher

³Sampling weights are used throughout the paper to generate means for a nationally representative sample of teachers.

⁴The wording of the required (in school) hours question in the SASS changed over time, making it a somewhat less reliable indicator of trends in effort.

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