Title:
Under Pressure: Job Security, Resource Allocation, and Productivity in Schools under NCLB

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Background / Context:

In 2002, President George W. Bush signed into law the No Child Left Behind Act (NCLB), which many consider to be the most significant federal intervention into education in the United States since the authorization of the Elementary and Secondary Education Act in 1965. The largest policy change in NCLB was to require that states adopt school accountability systems that determine whether public schools satisfy Adequate Yearly Progress (AYP). AYP is based on the fraction of students proficient on statewide math and reading exams. States must determine AYP status not only from schools’ overall proficiency rates but also the proficiency rates of student subgroups, separated by ethnicity and special needs (e.g., students from low income families, special education students, and limited English proficiency) and meeting a minimum level of enrollment in the school.

Most research on schools’ responses to accountability programs examines state and local systems that preceded No Child Left Behind (e.g., Ladd & Zelli, 2002; Hanushek & Raymond, 2005; Reback, 2008; Chakrabarti, 2007; Rouse et al., 2007; Chiang, 2009; Rockoff & Turner, 2008). These studies find evidence that accountability pressure can cause schools to change resource allocation in ways that raise average student achievement. For example, Rouse et al. (2007) find that Florida schools under accountability pressure improved achievement by devoting more time to instruction, increasing resources available to teachers, and decreasing principal control. Chiang (2009) finds increased spending on instructional equipment, curricular development, and teacher training using the same data.

However, research has also revealed that, instead of focusing on raising average student achievement, schools may shift their resources towards students and subjects that are most critical to the schools’ accountability rating, often to the detriment of students whose outcomes carry less weight and learning in lower stakes subjects. Further, additional studies uncover ways in which accountability can produce unintended effects, such as teaching to the test (Jacob, 2005; Figlio & Rouse, 2006), removing low performing students from the testing pool (Figlio & Getzler, 2006; Figlio, 2006, Cullen & Reback, 2006), or outright cheating (Jacob & Levitt, 2003).

Even though NCLB was authorized in 2002, knowledge about the impacts of NCLB on school practices and student performance is still nascent. National studies generally fail to employ the rigorous methods required to make causal claims (e.g., Center on Education Policy, 2007). To our knowledge, only two studies examine the impact of NCLB incentives in multiple states using rigorous identification methods. Ballou and Springer (2008) use grade-level variation in the administration of high-stakes NCLB tests across seven states to identify schools’ responses to accountability incentives. They find that students generally perform better on low-stakes exams during high-stakes years, particularly students near the margin for passing their states’ high-stakes exam. Dee and Jacob (2009) compare student test score trends on the National Assessment of Educational Progress (NAEP) across states that did or did not offer school accountability programs prior to NCLB. States without prior accountability policies experienced greater relative increases in 4th grade student math test scores and slightly greater relative increases in 8th grade student math scores but did not experience greater relative increases in students’ reading performance.

Most other studies of NCLB incentives that apply more rigorous methods tend to examine results from only one state or one city. These studies have found that for students enrolled in schools failing AYP, students scoring just below proficient tend to make greater than...
expected test score gains, but for students scoring at either end of the performance spectrum, the evidence is mixed (see Springer, 2008; Krieg, 2008; Neal & Whitmore Schanzenbach, forthcoming; and Ladd & Lauen, 2009).

**Purpose / Objective / Research Question / Focus of Study:**

The No Child Left Behind Act (NCLB) requires states to administer standardized exams and punish schools whose students do not meet the required proficiency rates that determine Adequate Yearly Progress (AYP). In theory, schools on the margin for meeting AYP may change their behavior in response to strong short-term incentives to increase students’ proficiency rates on specific exams. To investigate this issue, we have assembled a comprehensive, national, school-level data set concerning schools’ AYP status, student population characteristics, and test score performance. Using a nationally representative sample with a wide range of academic outcomes allows us to measure how individual students’ academic outcomes change over time. We use pre-NCLB test score performance and school characteristics to predict schools’ likelihood of meeting AYP requirements for math and reading during the first two years of NCLB. These predictions identify those schools whose proficiency rates are just near the margin of meeting the AYP targets in their state. Variance in state policies creates numerous cases where schools near the margin for satisfying their own state’s AYP requirements would have almost certainly failed or almost certainly passed AYP if they were located in other states. Thus, we can compare schools with very similar student characteristics and prior achievement but very different accountability pressure. We are interested in how this pressure affects mediating and moderating variables such as student behavior, teacher behavior, and school resource allocation. Taken together, these aspects of our study give us a much richer picture of the impacts of NCLB pressure on students and schools than the previous literature.

**Setting:**

This research is being conducted at Barnard College and Columbia Business School in New York, New York.

**Population / Participants / Subjects:**

We are using the schools, teachers, and students sampled in two NCES data sets: ECLS-K and SASS.

**Intervention / Program / Practice:**

The intervention is states’ adoption of various accountability systems under NCLB. Schools failing to meet Adequate Yearly Progress are subject to a number of sanctions, which increase with consecutive years of failure.

**Research Design:**

Our primary research method for measuring the impact of school accountability incentives will be quasi-experimental. The characteristics of schools facing pressure to meet
AYP can differ greatly across states due to variation in state-specific NCLB requirements and exam difficulty. Importantly for our study, the variation in AYP outcomes across states (please see Figure 1) seems to be driven by cross state variation in confidence interval size, rules that allow schools to achieve the “safe harbor” provision, and minimum subgroup size, not differences in academic ability. For example, we see that the fraction of students in a state who achieve proficiency in math is unrelated to the fraction of that states’ schools who meet AYP (please see Figure 2). A positive relationship, however, does exist between AYP outcomes across states and the average number of subgroups meeting enrollment minimums at schools in those states (please see Figure 3). Because each state designs its own tests and AYP requirements, there are numerous cases where a school’s AYP outcome in a particular state would have differed had that school been located in another state with different requirements. In our study, we exploit these policy variations to identify the impact of accountability incentives via a cross-state, difference-in-differences strategy. We examine the impact of NCLB incentives by comparing: (i) differences in outcomes for schools on the margin and not on the margin within the same state, with (ii) differences in outcomes for similar schools in other states where neither school is on the margin.

To maximize the scope of the study, we have assembled a comprehensive, national, school-level data set concerning schools’ AYP status, student population characteristics, and student test score performance. The richness of our data allows us to investigate whether NCLB incentives lead to changes in student outcomes and school resource allocation while controlling for a host of factors that might separately contribute to outcomes. In the first stage of our analysis, we use school-level NCLB data from each state to predict schools' likelihood of meeting AYP requirements for math and reading during the first two years of NCLB. These predictions allow us to construct proxies for the accountability pressure schools face. For example, schools with high pass probabilities feel little pressure to meet AYP requirements. In our second stage analysis, we use the probabilities of passing to examine how AYP pressure affects growth in students’ achievement, changes in students’ enjoyment of subjects, services offered to students, and teachers’ attitudes towards their jobs. Control variables and state fixed effects help us isolate the effects of NCLB on a student enrolled at a school on the margin of meeting AYP requirements.

Data Collection and Analysis:

Our project involved extensive collection of school-level No Child Left Behind data from every state. We have composed a data manual detailing the variables we have collected for each state. By the end of 2010, we plan to make our data and this manual publicly available on a customized website.

Findings / Results:

We find that short-term accountability pressure from NCLB does not have any negative effects on average student outcomes: students perform better on low-stakes exams and receive at least as much enjoyment from their studies. We do find that short-term accountability pressure increases teachers’ concerns about their job security and causes them to view existing academic standards less favorably. While the average effects on student performance are never negative, there is
some evidence that short-term pressure may mildly decrease the performance of some types of students in certain subjects.

Conclusions:

In the short term, our findings may inform the re-authorization of NCLB. First, the current cross-state differences in rates of schools meeting AYP seem arbitrary, and any revised policy should address the tremendous variation in states’ NCLB policies. Indeed, these results provide additional support to the movement to create broader standards, either at the national or regional level, to ensure that “proficient” is a meaningful benchmark for all states. Second, while teachers become concerned when their schools face greater accountability pressure, our results suggest that these concerns are not associated with worse outcomes for these teachers' students. This finding provides reassuring evidence that schools' strategic responses to accountability pressure do not lead to lower average outcomes for students. In the long term, these findings might guide the re-design of states’ existing accountability programs.
Appendix A. References


Appendix B. Tables and Figures.

Figure 1: Distribution of AYP Failure Rates Across States, 2004
Figure 2: AYP Failure Rate vs. Fraction Proficient by State, Math, 2004

Note: Data from five states are not available yet. Line represents a locally weighted regression.
Figure 3: AYP Failure Rates and State Variation in Accountable Student Subgroups

Note: Data from six states are not available yet. Line represents a locally weighted regression.