RESPONSE TO ROTHSTEIN (2014) ON REVISITING

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In a recent paper, Jesse Rothstein (2014) successfully replicates
[CFR] results o   using data from North Carolina. Bacher-Hicks, Kane, and Staiger
(2014   using data from the Los Angeles Unified School
District. Together, these studies show that value-added (VA) measures of teacher quality show very
consistent properties across different settings. Such replications are extremely useful for social
science and we are very grateful to Rothstein and Bacher-Hicks, Kane, and Staiger for their efforts in
conducting these studies.

Rothstein (2014) additionally raises three concerns about the validity of CFR   methods. One of
these concerns is new, while the other two were raised and addressed during the peer review
publication process of the CFR papers. (Rothstein was one of the peer reviewers of the CFR papers
a fact that was disclosed during his testimony for the defense in Vergara v. California.)

While Rothstein raises important issues based on very careful work, we do not believe that any of
them ultimately   s new
concern in detail in a recent note, which we summarize below:

> *Rothstein Concern #1: The "teacher-switching" quasi-experimental design used by CFR is
> invalid because it fails a placebo test by showing "effects" of changes mean teacher value-added
> on changes in <u>prior</u> test scores.*
>
> **Response:** *These apparent "placebo effects" stem from a mechanical feature of using lagged
> scores for the placebo test itself rather than a flaw in CFR's design.* Because teacher value-
> added (VA) is estimated using data from students in the same schools in previous years, teachers
> will tend to have high VA estimates when their students happened to do well in prior years.
> Regressing changes in prior test scores on changes in teacher VA effectively puts the same data
> on the left- and right-hand side of the regression, which can mechanically produce a positive
> coefficient even with a valid research design. We find that accounting for such mechanical
> effects   for instance, by controlling for school-subject-year level shocks   eliminates the
> correlation between changes in lagged scores and current teacher VA but does not affect the
> original estimate of forecast bias. Rothstein replicates this finding in a revised version of his
> paper (Appendix Table 6, Row 5). In addition, we find that placebo tests that do not directly re-
> use the same historical data used to estimate VA   for instance, estimating VA only using data
> from future years   uncover no evidence of a correlation with prior test scores.
>
> Bacher-Hicks, Kane, and Staiger (2014) also document the same set of patterns in data from the
> Los Angeles Unified School District. Unlike Rothstein, they conclude that the correl the

American Economic Review, drawing from the response letters we submitted to the prior to publication.

Rothstein Concern #2: The exclusion of teachers with missing VA estimates biases the conclusion that VA estimates are forecast unbiased.

Response: *The most definitive way to evaluate whether missing data are a concern is to focus on the subsample of school-grades where no data are missing. In this subsample, we find no evidence of forecast bias* (Column 4, Table 5, CFR I). Rothstein confirms this finding in his own data (Appendix Table 5, Column 4). Rothstein raises a set of issues about how to predict VA for teachers who only appear in the data for one year

Works Cited

Chetty, Raj, John Friedman, and Jonah Rockoff. 2014. Measuring the Impact of Teachers I: Evaluating Bias in Teacher Value-Added Estimates *American Economic Review* 104(9): 2593-2632.

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Bacher-Hicks, Andrew, Thomas J. Kane, and Douglas O. Staiger.
Estimates Using Changes in Teacher Assignments: A Replication of Chetty et al. in Los Angeles Harvard University Working Paper.

Rothstein, Jesse. 2014. Revisiting the Impacts of Teachers. UC-Berkeley Working Paper.