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How the Coronavirus Crisis May Improve Teacher Quality

Recession Hiring Boosts Teacher Quality and Student Learning

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THE SOARING UNEMPLOYMENT RATE because of the Covid-19 pandemic may improve teacher quality. That's the conclusion we draw from our study of more than 30,000 Florida teachers and their students. That group included teachers who entered the profession between 1969 and 2009, a period that spanned six recessions.

Our research explores how a dearth of job opportunities in the broader economy affects teacher quality—a key question, as teachers affect student outcomes during school and well into adulthood. It is a timely question as well, since jobseekers are likely to outnumber openings for some time. That may benefit U.S. schools and students in the long run, as we've found that individuals who choose to enter the teaching profession during a recession are significantly more effective at raising test scores. Weaker job markets offer a window of opportunity to hire stronger teachers.

The effects are most pronounced in math, where teachers who enter the profession during a labor-market downturn are 0.11 standard deviations more effective than those who start teaching when the economy is strong. That amounts to an additional $770 in lifetime earnings, on average, for each student taught by a teacher entering during a recession, or $13,000 cumulatively over a lifetime for the average class size of 17 students. The good news is that many of these teachers tend to stay in the classroom, providing high-quality teaching for many years to come.

The superior effectiveness of recession teachers does not reflect differences in their observed characteristics or teaching assignments. In comparing teachers who entered the profession during recessions with those who started teaching in better economic times, we find they do not differ significantly by gender, race, or age at career start, nor by the demographic makeup of the schools in which they teach.

The driving factor appears to be occupational choice. Economic downturns temporarily change the supply of potential new teachers, which grows to include adults seeking a more stable source of employment because of a lack of opportunities in other professions. That is why we find that the cohorts of teachers hired during recessions have a large share of exceptionally strong performers.

With state tax collections in sharp decline, concerns over widespread learning loss due to school closures, and an uncertain return to in-person instruction, school districts face tremendous challenges in the months ahead. These findings suggest at least a hint of a silver lining and point to a strategy to improve teacher quality during good times, as well. Consider the overall labor market and increase pay for new teachers in particular, to attract more effective candidates into the profession.

Choosing the Classroom

The number of people completing teacher-education programs each year has been roughly double the number of newly hired teachers in the United States since at least 1987, when the earliest comprehensive data are available. This implies that at any point in time, there is a large pool of potential teachers nationwide who are eligible to obtain certification immediately, regardless of the rigidity of state certification regimes. It also suggests that for many potential teachers, the key decision about whether to enter the profession occurs when they enter the labor market rather than when they choose a degree program.

To explore how business cycles affect teacher quality, we use a simple framework of self-selection in which individuals choose an occupation based on the benefits they expect to receive in return for their work. The choice in this case is between working in the teaching sector and any other sector—in other words, all other labor-market options for potential teachers. Under typical economic conditions, if ability is valued in both sectors but teaching offers lower returns in terms of pay and prestige, fewer people will choose to become teachers. But when a recession hits, teaching becomes more attractive. Unlike private sector wages, teacher pay is rarely cut during recessions. The pace of hiring typically does not slow. (The Great Recession of 2008 was a notable exception in that regard.) And the job protections afforded teachers by tenure may become more salient in the minds of jobseekers. All this implies that the average ability of people entering the teaching sector during economic downturns may be higher.

Temporary fluctuations in economic conditions are most likely to influence selection into teaching when certification regimes permit as many individuals as possible to enter the profession without completing additional training. Traditionally, U.S. states required an undergraduate or master's degree from a teacher-preparation program in order to be certified, which likely constrained any short-term supply response. In recent decades, however, shortages of certified teachers in specific subject areas led many states to create alternative teacher-certification programs, which allow adults with at least a bachelor's degree to begin teaching immediately while completing requirements for certification. As of 2011, 45 states had approved alternative-certification programs, and one in five people completing teacher-preparation programs nationwide did so via an alternate route.

Our study focuses on Florida, where the certification regime is typical of those states that have created alternative entry routes into teaching. The state initially awards professional teaching certificates only to graduates of state-approved teacher-preparation programs who have passed tests of general knowledge, professional education, and the subject area in which they will teach. However, any college graduate may be eligible for a temporary teaching certificate if he or she has completed sufficient coursework or can pass an approved test in the relevant subject area. Such certificates are good for up to three years, allowing any college graduate to enter the teaching profession in Florida (at least temporarily) by passing a single exam.

Florida is not typical in another important way, however, because much of its teaching workforce is from out of state. Demand for new teachers has long outpaced the supply of graduates from local preparation programs; in the 1980s, the state estimated that as many as 45 percent of its new teachers had completed their preparation program outside Florida. More recently, in 2009 some 23 percent of individuals receiving their initial Florida teaching credential were prepared out of state, according to federal estimates. These statistics highlight the extent to which the pool of potential teachers for Florida public schools is national in scope, and therefore apt to be influenced by nationwide, not state-specific, economic conditions.

Data and Method

To measure the effectiveness of individual teachers, we create estimates of their value-added to students' math and reading performance on the Florida Comprehensive Assessment Test during the 2000-01 through 2008-09 school years. Such estimates show whether each teacher's students made more, less, or the same amount of progress in those subjects as their peers assigned to other teachers over the course of a school year. There are certainly dimensions of teacher quality not captured by their value-added to student test scores (see "The Full Measure of a Teacher," *research,* Winter 2019). However, the weight of the evidence indicates that value-added estimates do capture important aspects of teacher quality, including their long-term impact on student success and wellbeing (see "Great Teaching," *research,* Summer 2012).

We limit our sample to teachers in grades 4 and 5 who can be confidently associated with students' test-score gains. We chose fourth- and fifth-grade teachers because these teachers typically teach all subjects, and we only include student-teacher pairs if the teacher accounts for at least 80 percent of the student's total instruction time. This yields a total of roughly 32,600 teachers, 5,200 of whom entered the profession during a recession.

Our data also include information on teachers' demographics and years of experience. We use the latter to estimate a teacher's career start year by subtracting her total years of experience from the year she is observed in the classroom. Approximately 42 percent of the teachers in our sample started their careers during the study period; the other 58 percent were already working in the classroom.

To identify which career-entry years occurred during recessions, we look to the National Bureau of Economic Research. The bureau defines a recession not in strict quantitative terms, but as "a period between a peak and a trough" based on gross domestic product, employment, and income data. Using that definition, over the past four decades we find six recessions and eight cohorts of teachers who started their careers during a recession. For example, teachers starting their careers during the 1990-91 school year are classified as having entered during a recession, because the bureau dates the economic downturn of the early 1990s to have occurred between July 1990 (peak) and March 1991 (trough).

Teachers who enter the profession during a labor-market downturn are 0.11 standard deviations more effective than those who start teaching when the economy is strong.

In addition, we also look at other indicators of weak economic conditions, such as changes in gross domestic product and various unemployment measures, which are highly correlated with the bureau's defined periods of recession. Our data also include the demographic and educational characteristics of each student such as gender, race, free or reduced-price lunch eligibility, limited English proficiency status, and special education status. We use this information to adjust our estimates of teachers' value-added estimates for the demographic makeup of their students.

Recession Teachers

Based on the logic laid out above, we would expect to find a positive effect of economic conditions on the effectiveness of teachers who start during a downturn, since recessions reduce the outside options of potential teachers as they are entering the labor market. Because a recession temporarily recasts employment prospects, with less-stable jobs in the private sector appearing to have more risk and less reward than typical, both the number and the average quality of applicants for teaching jobs should increase. That, in turn, should lead to higher average value-added estimates for teachers in recession cohorts.

That's just what we find. In looking at teachers who entered the workforce over the past four decades, those who started their careers during a recession are significantly more effective at raising students' test scores compared to those who entered the classroom during better economic times (see Figure 1). Looking separately at each group of teachers who entered the profession during a recession confirms that this result is not driven by any one downturn. The recession impact reappears over time.

We looked for other differences, beyond effectiveness, in the groups of teachers who entered their career during recessions and the much larger group who did not. The share of teachers with a master's or doctoral degree is slightly larger, the share of male teachers is approximately the same, and the share of white teachers is somewhat smaller. None of these differences rise to the level of statistical significance, however. The two groups of teachers also taught similar types of students, as measured by the share of students who are black and by the share of students eligible for free or reduced-price lunch. We look at each of these characteristics, and do not find any evidence they can explain why recession teachers are more effective.

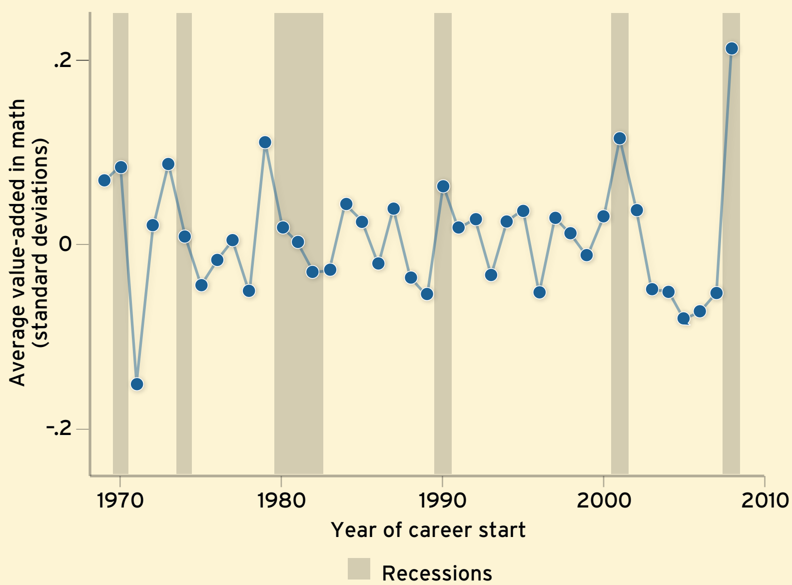
In math, recession teachers have value-added estimates that are 0.11 standard deviations higher than non-recession teachers. In reading, recession teachers have value-added estimates that are 0.05 standard deviations higher than non-recession teachers. These differences are modest in size, amounting to no more than a week's worth of additional learning each year for a student assigned to a recession entrant. Yet even small differences in teacher effectiveness add up when multiplied by the number of students a teacher instructs over the course of her career.

When a recession hits, teaching becomes more attractive.

These differences in average effectiveness could result from fewer ineffective teachers in recession cohorts, more teachers who are highly effective, or both. To find out which explanation is correct, we compare recession and non-recession teachers across the full distribution of effectiveness. We find that recession teachers are significantly more effective than non-recession teachers among all but the lowest-performing 10 percent of teachers. The differences are particularly pronounced within the top 20 percent, however, where recession teachers are 0.2 standard deviations more effective than their colleagues who did not start teaching in a recession. In short, cohorts of teachers hired during recessions have an unusually high share of superstars.

More Talented Teachers in Tough Economic Times (Figure 1)

Teachers who start their careers during a recession have higher value-added scores, on average, than those who start when the economy is stronger.



NOTE: Figure shows average experience-adjusted value-added in math by year of career start among fourth- and fifth-grade teachers observed in Florida public schools between 2001 and 2009. Recessions are defined by the National Bureau of Economic Research.

Source: Authors' calculations using data from the Florida Department of Education's PK–20 Education Data Warehouse.

More Evidence

We conduct additional analyses to confirm that it is the economic conditions at the outset of a teacher's career that matter for her effectiveness, not the economic conditions at other times. For example, we find no evidence that a recession that occurs one, two, or three years before or after a teacher starts her career is associated with differences in effectiveness. Nor do we find any effects of having experienced a recession at ages that could be particularly important for other reasons, such as at age 18, 20, or 22. This reaffirms that job prospects drive the decision to become a teacher and therefore change the labor pool.

Of course, whether the economy is in a recession is not the only measure of economic conditions. Indicators like the unemployment rate, and year-to-year changes in that rate, provide a continuous measure of the strength of the national economy when each new cohort of teachers started their careers. We find that these indicators, too, are strongly correlated with teacher effectiveness (see Figure 2). Teachers who start their career when the unemployment rate among college graduates is rising are more effective, on average, than those who enter when that rate is falling. In fact, this relationship is evident even if we exclude from our data the eight cohorts of teachers who entered during recessions identified by the National Bureau of Economic Research. This again strengthens the case that our central finding does not reflect idiosyncratic patterns in hiring associated with a small number of recessions, but instead results from changes in prospective teachers' outside options.

Finally, we investigate whether recession teachers, some of whom were prompted to enter the classroom by outside economic conditions, are more likely to leave the profession than their colleagues. Across all teachers, attrition is somewhat more common among low-value-added teachers than among high-value-added teachers. However, this pattern does not differ systematically between recession teachers and those who did not start in a recession. Controlling for teachers' value-added, we find no evidence that recession teachers are more likely to drop out. This is an important finding, as it implies that some of the teachers who were pushed into the profession by a temporary shift in economic conditions decided to stay, even as economic conditions improved. It also confirms that our overall finding that recession teachers are more effective is not an artifact of a higher rate of attrition among recession teachers.

Supply vs. Demand

We have outlined a logic for how the effect of recessions at career start on teacher effectiveness would be driven by changes in the supply of new entrants into the profession. In theory, this effect could also reflect changes in demand. A demand-side explanation would require that two conditions hold. First, it would need to be the case that school districts, perhaps due to budget cuts or to reduced attrition of existing teachers, hire fewer new teachers during recessions. Second, school districts would need to be able to assess the quality of inexperienced applicants and hire those who are more capable.

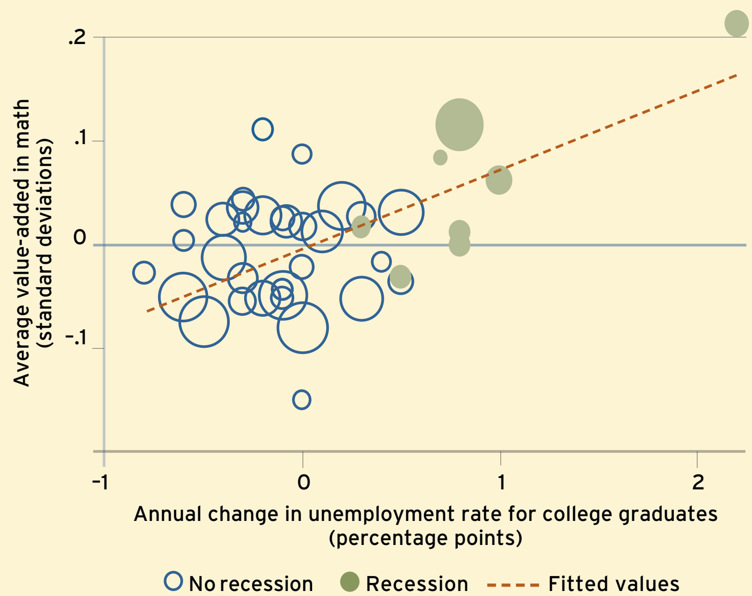
Our data do not allow us to fully disentangle these two mechanisms. We argue, however, that the two necessary conditions for a demand-side explanation to hold sway are each unlikely.

First, in our data, the cohort size of teachers starting in any one year is unrelated to the business cycle. Unlike private industry, the number of teachers hired each year is driven mainly by student enrollment and regulatory limits on class size, not day-to-day cash flow. Second, it seems unlikely that school administrators are able to identify the best applicants since education credentials and college selectivity—typically the only ability signals of applicants without prior teaching experience—are at best weakly related to teacher effectiveness.

Furthermore, recall that we find that the recession effect is driven not by a reduction in ineffective teachers, but rather by a jump in the number of highly effective teachers—just the opposite of what would be expected from a drop in demand. Taken together, these patterns suggest that decreases in the demand for teachers during recessions are

Teacher Effectiveness and the Job Market for College Grads (Figure 2)

Teachers who start their career when the unemployment rate among college graduates is rising are more effective, on average, than those who enter when that rate is falling, whether or not career entry occurred during a recession.



NOTE: Figure shows the relationship between average experience-adjusted value-added in math and the annual change in the national unemployment rate among college graduates in the year teachers started their careers. The sample includes fourth- and fifth-grade teachers observed in Florida public schools between 2001 and 2009 who started their careers between 1971 and 2008.

SOURCE: Authors' calculations using data from the Florida Department of Education's PK–20 Education Data Warehouse and the U.S. Bureau of Labor Statistics.

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unlikely to be the driver of recession teachers' effectiveness.

Rather, the pattern of results suggests to us that the supply-side explanation is more likely. In this case, increasing the economic benefits of becoming a teacher emerges as an effective strategy of improving student outcomes. When it comes to occupational choice, worse outside options during recessions are equivalent to higher teacher wages. As such, our results suggest that policy makers would be able to hire better teachers if they increased teacher pay.

What might the benefits of such a policy be? Research by Raj Chetty, John Friedman, and Jonah Rockoff finds that students whose teachers are a full standard deviation more effective go on to earn an estimated 1.3 percent more at age 28, which corresponds to an estimated $7,000 more in discounted lifetime earnings in 2010 dollars. We translate that into gains in lifetime earnings of $770 in 2010 dollars for each student taught for one year by a recession rather than a non-recession teacher. That amounts to $13,000 for a class of 17 students, the average class-size in grades 4 and 5 in Florida during our study period. This is equivalent to more than 20 percent of the average teacher salary in Florida, which was $46,583 in the 2012-13 school year.

Whether these benefits reaped by students exceed the costs associated with increasing teacher pay to attract better teachers is another question. To explore that, we assume the entire recession effect is driven by earnings losses in the private sector during recessions—and that one could achieve the same increment in teacher quality by raising teacher pay by the same amount. Estimates of the drop in median earnings for college graduates during a recession range from $2,379 and $7,140, well less than our estimate of the expected benefits to students.

This admittedly coarse comparison suggests that it may be efficient to increase pay for new teachers and thereby improve average teacher effectiveness. Yet this conclusion comes with the caveat that it may be difficult for policy makers to increase pay only for incoming teachers. Our evidence does not imply that increasing pay for those already teaching would yield benefits. Moreover, there are likely cost-neutral ways to make the total compensation package offered to new teachers more attractive. One such method may be to boost starting salaries while reducing spending on pension benefits that only a minority of teachers in most states persist in the profession long enough to receive.

An Unexpected Opportunity

For school districts dealing with the educational and budgetary fallout of the coronavirus pandemic, the prospect of hiring new teachers right now may seem far-fetched. Yet the fact that the U.S. economy entered recession in February suggests that districts now have a chance to strengthen their teacher workforces. While hopes of a "V-shaped recovery" remain, the record-setting unemployment rates in recent months—topping out in April at 14.7 percent nationwide, seasonally adjusted—indicate that plenty of talented Americans are looking for work. That likely includes some who, in ordinary times, wouldn't give teaching a thought.

Given the health-related restrictions schools are likely to face when they reopen, school districts may have no option but to do some hiring. Class-size limits aimed at ensuring social distancing will necessitate additional teachers. And some unknown number of experienced educators—especially among the 18 percent of U.S. teachers who are over the age of 55 and therefore more vulnerable to Covid-19—will be unwilling to enter the classroom. Such teachers may welcome early retirement incentives, which would in turn free up space for new recruits.

Recessions may be painful in the short term, but they also can serve as an opening to hire more effective teachers. As districts and schools look to what may be a daunting fall, they have an opportunity to respond to short-term challenges in a way that benefits students over the long haul.

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