

Understanding the Levers for Improving Teacher Quality

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Great teachers can lead to significant improvements in academic performance and long-term student outcomes (Chetty et al., 2014a and 2014b) and serve as models for their fellow teachers (Smith et al., 2004). A student who has a one standard deviation better teacher for one year will have about a 0.25 standard deviation increase in test scores. Unfortunately, teacher quality is quite low in most developing countries. For example, in Pakistan, twenty-two percent of public school teachers are absent on a given day. When teachers are present, they are often not teaching or are using ineffective teaching methods. By third grade, students are on average two years behind national learning standards (Andrabi et al., 2008). Therefore, a challenge to policy makers is how to attract talented individuals to teaching, accurately screen for quality at the time of hiring, and incentivise them to stay in the classroom.

Professor Tahir Andrabi, one of the lead principal investigators on the Research on Improving Systems of Education (RISE) Pakistan Country Research Team, and I are interested in studying how to increase teacher quality in the context of private schools in Pakistan, which currently educate roughly one in three students in Pakistan. Using data from a network of private schools spread throughout Pakistan, we can begin to dig into some of these questions.

The last decade has produced a significant amount of research on improving teacher quality, and we can think of these approaches as addressing quality from one of four different directions. Figure 1 shows these four “levers” affecting the quality of teachers. Policymakers can impact the quality of those entering (1) and leaving (2 and 3) as well as introducing incentives, improving capacity, and providing complementary inputs to improve the existing stock of teachers (4).

What do researchers currently know about each of these areas?

1. Attracting and screening for high quality

There is evidence from other public sectors that higher salaries and advertising the professional growth opportunities of a job attract higher quality candidates and do not crowd out those who are intrinsically motivated (Finan, 2013 and Ashraf, 2016). However, selecting among the candidates that apply is difficult. Most information (credentials, experience, test scores, etc.) provided at the time of hiring a new teacher are weak predictors of who will end up being a good teacher, but observing mock lessons is a fairly good predictor of teacher quality (Jacob et al., 2015).

Key Points

- We propose four levers to improve teacher quality. Policies should focus on: (a) increase quality applicants, (b) retain high quality teachers, (c) increase turnover of low quality teachers, and (d) improve existing stock of teachers.
- Existing research provides insight on improving each of these proposed four policy levers in isolation rather than as interconnected parts.
- Understanding the policy interaction on the resulting teacher supply and different levels of response from current and potential future teachers provides an important channel for further impact.
- Research suggests that teachers who leave the profession after a few years – (i.e., more experienced teachers) – tend to be higher quality even controlling for average quality of those with similar experience levels. Teachers who leave within the first year; however, are more likely to be low performers. Thus, policies that increase retention of first year teachers could potentially be harmful, depending on the average quality and cost of new hires.

2. Retaining high quality

Higher pay and non-pecuniary benefits like upward career mobility potential and better working environments can be effective in retaining high quality teachers and increasing job satisfaction (De Ree et al., 2016).

3. Removing low quality

While tenure rules remain strong in many areas of public sector employment, an increasing fraction of public school teachers (about thirty percent in India) and many private school teachers are not covered by tenure restrictions (Muralidharan et al., 2016). This can allow schools more control to remove low performers and induce more effort from all teachers, though the evidence of these effects is mixed.

4. Increasing quality of the existing stock

Incentivising teachers by paying them for days attended or linking bonuses to their students' performance have been effective mechanisms to improve student outcomes. Smaller class sizes and teacher training are generally less cost effective interventions in improving teacher quality.

So where do we go next from here as researchers? There are two promising directions for further work. First, it is crucial to dig into heterogeneities in the teacher labour market to understand how the four levers impact different kinds of teachers. Second, research should move from thinking about these four areas in isolation to studying them as part of connected aspects of the teacher labour market.

For example, changing the rules on tenure affects the behaviour of the current stock of teachers, but it may also change who decides to become a teacher in the first place. Similarly, tying teacher pay to student outcomes may have both selection and retention effects. We cannot think about any of the interventions discussed above in isolation because there will be large effects on the supply of teachers available as a result of these policies.

In the sample of Pakistani schools we study, the teacher population has a tremendous amount of heterogeneity in teacher tenure and quality, as well as differences between private and public school teachers. Teachers in private schools in Pakistan are generally younger, nearly all female, have less experience and credentialing, higher turnover and are paid less than those in the public sector. Understanding how the labour market is structured matters because, for example, what works to incentivise new teachers might not work for an experienced, older teacher.

We can see an example of the heterogeneity among teachers in Figure 2. Turnover rates vary significantly depending on how many years the individual has been teaching. In addition, if we dig into the types of teachers that are leaving, we see

there are a mix of low and high performers leaving. This ratio (low performers to high performers) is decreasing in the years of experience, so a large fraction of teachers who leave early on, are the least effective teachers and are essentially self-selecting out. Whereas in later years, the teachers who leave are more likely to be high quality individuals, even controlling for mean quality of those with similar experience, pulled away by better opportunities. This has implications for how schools can target the retention of high performers and remove low performers. Schools often see turnover as a universally negative phenomenon, but some turnover is efficient if a new hire is not a good fit for the profession. Digging into these differences in quality allows us to calculate an efficient rate of turnover.

Figure 1: Four levers used to improve teacher quality

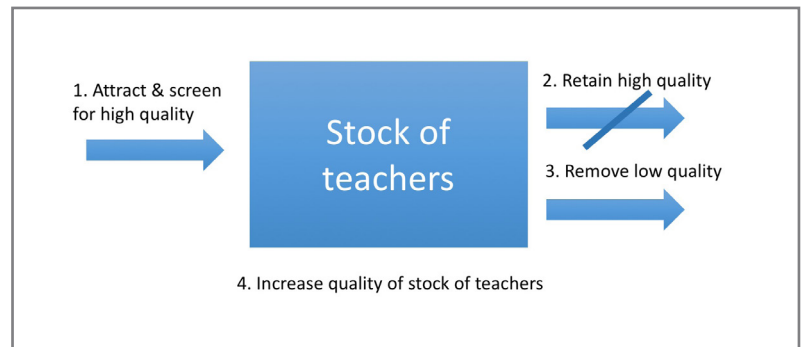
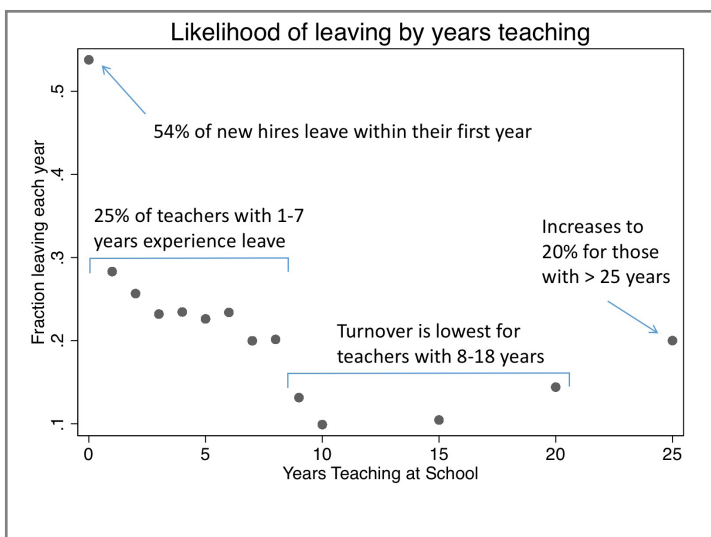


Figure 2: Teachers who leave in later years are more likely to be high quality



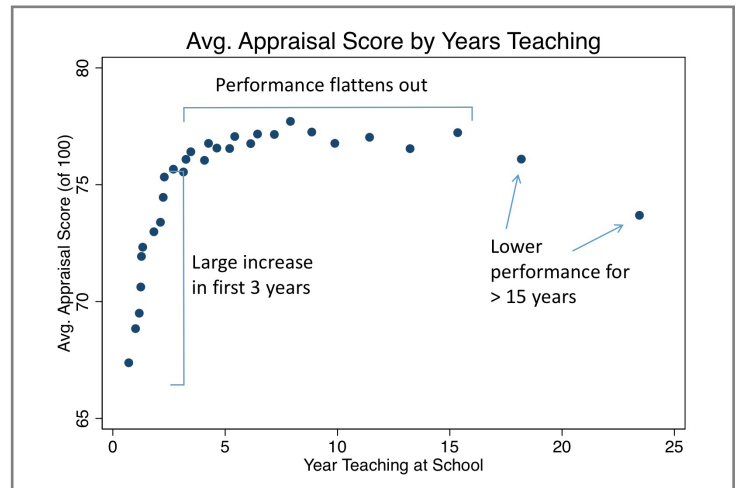
Source: confidential

While not a perfect measure of true teacher quality, teachers' appraisal scores, shown in Figure 3, also show that there is quite a difference between teachers who are early in their career versus later. This is unsurprising, but it has important implications for performance pay systems. These programs may be used as a recruitment tool to attract teachers, but if the new teachers are low performers they may lose out depending on the structure of the performance pay regime. Who is impacted positively and negatively from such programmes matters for the supply of teachers.

Understanding the effect of these differences amongst teachers will be crucial if we want to implement any of the proposed policies from these four levers on a larger scale. Introducing too strict of a removal policy may drive the supply of applicants to be too small.

Introducing performance pay may induce risk averse individuals to leave teaching. Over the next few years, through RISE, we hope to better understand the interconnectedness of these four levers and the dynamics on teacher quality.

Figure 3: Teacher appraisal scores show correlation between years of experience and teacher quality.



Source: confidential

Christina Brown is a doctoral student in Economics at UC Berkeley and a researcher on the RISE Pakistan Country Research Team.

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