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Economics 226

Professor Werkema

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### Charter School Entry and Teacher Labor Markets

A teacher shortage is sweeping the nation. Teachers are leaving the market, expressing dissatisfaction with pay and lack of administrative support.<sup>1</sup> If the teacher shortage is as severe as the headlines claim, then the solution seems to be to incentivize teachers to enter rather than exit the market. Perhaps charter schools are the solution. Charter schools are often marketed as a way to increase competition in the education market on the supply side, forcing schools to compete for students and improve student outcomes across the board. However, with more schools, there will certainly be a change in other markets as well. Charter schools are not simply new suppliers of education. The entry of charters is also the entry of new buyers into the teacher labor market. In theory, these new buyers should change the labor market from a monopsony to a more competitive model and lead to better outcomes for teachers. In practice, there are mixed but significant effects on the impact of charter school entry on the labor market for teachers. In section one of this paper, I explore the theory behind the teacher labor market in American public schools and the negative impacts of the monopsonistic nature of the system as it stands now. In section two, I use data from various charter school expansions and examine the impacts that charter expansion has on teacher salary and teacher characteristics at traditional public and charter schools.

Consider a perfectly competitive labor market. A profit-maximizing firm needs to hire workers to produce the goods it sells. A firm in perfect competition chooses how many workers to

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<sup>1</sup> Tim Walker, "Survey: Alarming Number of Educators May Soon Leave the Profession," NEA, February 1, 2022, <https://www.nea.org/advocating-for-change/new-from-nea/survey-alarming-number-educators-may-soon-leave-profession>.

hire based on two factors. First the marginal revenue product of labor, or MRPL, is an expression of how much revenue the worker can make the firm. It is calculated as a factor of the worker's marginal product, how much of the firm's goods the worker can produce, and the price, or the marginal revenue, of the goods. The law of diminishing returns states that the marginal revenue product of the labor curve is downward sloping. This creates the firm's demand curve. The second factor is the wage rate, how much it costs to employ one more worker. Thus, a firm will hire until the MRPL intersects the wage rate. Beyond that point, it is no longer profitable for firms to hire additional workers. In a perfectly competitive market the wage rate is set, and the firm does not have enough market power to change it. Firms can also hire as many workers as is profitable for them at this rate.<sup>2</sup> All the firms' MRPL curves are combined to create a market demand curve. Each teacher selling labor combines to form a market supply curve. Each worker willing to work at that wage rate can find a firm to hire them. In this type of market, shortages should not happen. If there is a shortage, the wage rate should correct itself to close the gap and create a new equilibrium wage rate and quantity.

In contrast, a Monopsonistic firm has different factors with which to contend. Economist Joan Robinson first defined a monopsony as a market with many sellers and only one buyer. Now, that definition has been expanded among economists to include any firm which faces an upward-sloping supply curve rather than the flat wage rate of perfect competition.<sup>3</sup> If a monopsonistic firm wants to hire significantly more workers, it must pay higher wages. Boal and Ransom claim that a firm in a monopsony market has a set budget for workers. The firm will hire workers to maximize revenue, subject to the cost of labor. Boal and Ransom write the equation as a constrained optimization problem where firms attempt to maximize labor and through labor,

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<sup>2</sup> "The Demand for Labor," in *Principles of Economics* (University of Minnesota), accessed 2022, <https://open.lib.umn.edu/principleseconomics/chapter/12-1-the-demand-for-labor/>.

<sup>3</sup> William M Boal and Michael R Ransom, "Monopsony in the Labor Market," *Journal of Economic Literature* 35, no. 1 (March 1997): pp. 86-112, <https://www.jstor.org/stable/2729694>.

revenue, given the constraints of the upward sloping labor supply curve. They argue that firms will hire employees to create a monopsonistic equilibrium wage and labor quantity defined as  $w_m$  and  $L_m$ . Firms are constrained by this. They cannot hire more employees or they will have to increase wages. Were they able to hire unlimited workers at this low wage rate, Boal and Ransom argue firms would hire a higher quantity of workers,  $L_m^*$ .<sup>4</sup> The gap between a firm's desired quantity of labor and the actual quantity of labor could easily be perceived as a shortage.

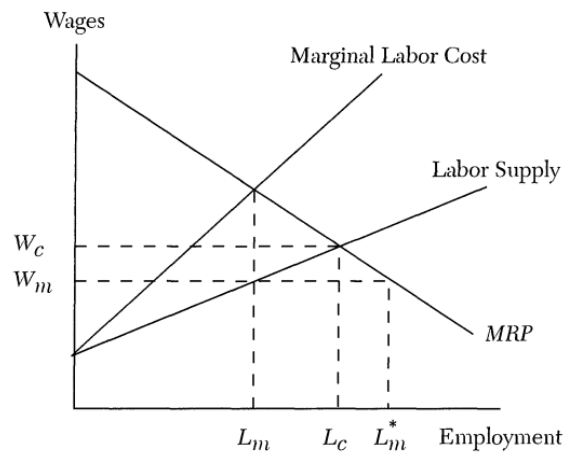


Figure 1. Wage and Employment Determination under Monopsony

Figure from William M Boal and Michael R Ransom,

“Monopsony in the Labor Market,” *Journal of Economic Literature*

Where does the teacher labor market fall on the spectrum of competition? In the teacher labor market, there are approximately 3.3 million traditional public school teachers and only around 500,000 private school teachers.<sup>5</sup> The institution of public schools has a significant share of the market, expanded when you consider the differences in requirements for public and private school teacher certifications and variance in the location of public and private schools across the country. In more rural areas, public schools are almost certainly akin to a local monopsony, the only employer in

<sup>4</sup> *ibid.*

<sup>5</sup> “The NCES Fast Facts Tool Provides Quick Answers to Many Education Questions (National Center for Education Statistics),” National Center for Education Statistics (NCES) Home Page, a part of the U.S. Department of Education, accessed December 21, 2022, <https://nces.ed.gov/fastfacts/display.asp?id=28>.

the area of teachers. Employing more than six times as many teachers as private schools, public schools certainly face an upward-sloping supply curve. Further, a shortage, especially one so prolonged as the teacher shortage, should not happen in a perfectly competitive market. If there is a gap between supply and demand at a given price point, wages should rise to meet demand. However, that has not happened. Instead, schools have lowered certification requirements and settled for a system in which teacher turnover is high, and satisfaction is low. The gap between  $L_m$  and  $L^*_m$  that Boal and Ransom define as vacancies may more accurately describe the labor market and teacher shortages that we see.

Many of the proponents of charter schools argue that charter schools can infuse competition into the education market and lead to better student outcomes. Economists argue that charters will force public schools to respond to increased competition by improving their own students' experiences.<sup>6</sup> Much of this focus is on the supply side. Increased competition will make firms supply a better product and improve student outcomes. However, if we consider public schools as a monopsony, more buyers could lead to more desirable outcomes in the labor market. If forced to compete for qualified and quality teachers, schools should respond by raising wages, and improving working conditions to improve the labor market outcomes overall for American teachers.

First, It's important to consider whether charter schools are actually buying in the same teacher market as traditional public schools. While both schools are public and broadly require teachers, there is some evidence that the characteristics of charter school teachers are different. There is limited evidence that teachers exit traditional public schools for charter schools. Jackson found in North Carolina that "In 1997, the year with the greatest charter entry, 0.8 percent of teachers at schools within 2 miles of a charter school exited to a charter school."<sup>7</sup> This number

<sup>6</sup> Figlio, David and Hart, Cassandra and Karbownik, Krzysztof, Effects of Scaling Up Private School Choice Programs on Public School Students. IZA Discussion Paper No. 14342, Available at SSRN: <https://ssrn.com/abstract=3846686> or <http://dx.doi.org/10.2139/ssrn.3846686>

<sup>7</sup> C. Kirabo Jackson, "School Competition and Teacher Labor Markets: Evidence from Charter School Entry in North Carolina," *Journal of Public Economics* 9, no. 5-6 (2011): pp. 431-448, <https://doi.org/10.3386/w17225>.

decreases with distance, indicating that charter schools may be disrupting local labor markets.

However, with only 3.6% of all teachers exiting going to charter schools in 1997, it seems that charter schools are not the primary reason that teachers are leaving schools. Further, Jackson finds no significant impact of charter schools on teacher turnover in difficult to staff schools.

While Charter schools do not increase teacher turnover, they may play a role in teacher salaries at traditional public schools. Jackson found a statistically significant positive impact of charter school entry within ten miles on traditional public school teacher salaries. Difficult to staff schools show an even stronger positive impact. At the same time, traditional public schools see a statistically significant decrease in teacher hiring as new charter schools enter the market within 10 miles.<sup>8</sup> This evidence indicates that charter entry may be making traditional public schools more likely to try to retain the teachers that they have. Sorensen and Holt's findings seem to confirm this analysis. They suggest that charter schools' lower licensure requirements may cause an exit of novice teachers while traditional public schools manage to retain more experienced, more qualified teachers. However, they further implemented heterogeneous analysis and found that entry of a predominantly white charter school in proximity to a predominantly nonwhite traditional public school leads to a loss of effective qualified teachers from those traditional public schools and an increase in new hires.<sup>9</sup>

It is important to note the limitations of this analysis. These results are primarily from North Carolina, and regulations on charter schools vary across states. Thus, the impact that charter schools have across states can vary significantly. For example, a Massachusetts study found that charter schools are likely to hire new uncertified teachers who either exit the market if they are ineffective or remain and become certified if they are effective. Bruhn et al. argue that this has a positive impact on

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<sup>8</sup> *ibid.*

<sup>9</sup> Lucy Sorensen and Stephen B Holt, "Sorting It out: The Effects of Charter Expansion on Teacher and Student Composition at Traditional Public Schools," *Economics of Education Review* 82 (June 24, 2021), <https://doi.org/10.31235/osf.io/y6wh4>.

the labor market from which traditional public schools can draw.<sup>10</sup> The analysis is further limited because the vast majority of charter school analysis seeks to measure the impact of charter schools on student outcomes. Thus, most literature on the teacher labor market focuses on the impact that charters have on student outcomes rather than teacher outcomes. While student outcomes are important, and teachers certainly matter in determining student outcomes, considering that the teacher shortage is so severe right now, teacher outcomes may deserve a more focused review.

The evidence from North Carolina seems to indicate that charter schools do alter the labor market for teachers in the local area, and charter entry can fundamentally change the composition of the teacher workforce at traditional public schools. It is worth noting that the exit of experienced teachers from diverse traditional public schools to predominantly white charter schools indicates that students may be harmed by this labor market change. However, across the board, it seems that teachers experience a positive impact with more options and increased salaries across the board. These results seem to confirm the idea that increased competition on the buyers' end in the teacher labor market does make a difference and that more analysis is warranted on how charter schools can help solve the problems inherent in the teacher labor market.

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<sup>10</sup> Bruhn, Jesse, Scott Imberman, and Marcus Winters. (2020). Regulatory Arbitrage in Teacher Hiring and Retention: Evidence from Massachusetts Charter Schools. (EdWorkingPaper: 20-264). Retrieved from Annenberg Institute at Brown University: <https://doi.org/10.26300/83ff-gd98>

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