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School Choice Benefits Teachers Too? The Effects of School Choice on Teacher Salaries and Employment

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Abstract

We examine whether diminishing monopsony power, through the introduction of public and private school choice programs, benefits teacher salaries and employment in the United States overall. We use year and district fixed effects regression, comparing over 18 thousand public school districts to themselves over two decades, and find that school choice programs increase teacher salaries and employment. Specifically, private school voucher programs increase public school teacher salaries by a tenth of a standard deviation and employment by around seven percent of a standard deviation. Further, we use year and school fixed effects regression, comparing nearly a thousand private schools in Indiana, D.C., and Louisiana to themselves over 14 years, and find that voucher programs largely increase private school teaching jobs by around one standard deviation.

Keywords: private school; school choice; school monopsony; school vouchers

Introduction

Teachers unions vigorously oppose school choice. This can often lead to the debate around school choice being framed as a battle between public school educators and parents who want educational options for their children. While it is rational to assume that parents who want choice might benefit by receiving choice, teachers often perceive themselves to be negatively impacted by the establishment of school choice programs. However, this may not be the case. Indeed, some economists may argue that the two groups, parents and teachers, ought to be on the same side as they would both benefit from the establishment of school choice programs.

In locations where choice programs are not established, public school districts can be viewed as monopolists exercising their market power over parents and children. Unless parents can afford to move to a new location or can opt out of the system by purchasing private schooling or by homeschooling their children, parents are compelled to send their children to the public school. They are also compelled to pay for public schools through taxation, regardless of where they send their children. While much has been written about this situation, it must also be realized that public schools also hold a near monopsony of the teaching jobs. That is, if you want to teach in an area without school choice programs then you are compelled to work at a public school as they hold all of the teaching jobs. As such, school choice programs not only disrupt the monopoly that the government holds over the provision of education, but it may also break the monopsony that is held over the teaching positions. The latter could lead to changes in the teacher labor market.

Since over 90 percent of school-aged children attend public schools, and the state has a near-perfect monopoly on publicly raised funds, teachers are subject to the desires of essentially one employer: the government. In other words, the state exerts significant monopsony power on

K-12 teachers across the nation since there is a large barrier to market entry for alternative

private school options. Indeed, out of the estimated 3.555 million K-12 teaching positions in the

United States in 2013,[1] about 88 percent were employed by the state, while only 12 percent were

employed by private organizations. As in any other monopsony situation where the labor market

is dominated by one major employer, teachers are forced to accept the working conditions and

salaries set by the monopsonist (Boal & Ransom, 1997).

If teachers become unhappy with the working conditions and salaries controlled by their

main employer, they currently have three potentially unattractive options: (1.) change

professions, which involves significantly large transaction costs, or (2.) accept the even lower

salaries offered by private schools (since private schools are forced to keep costs – that is,

teacher salaries – low in order to remain competitive against "free" traditional public schools that

currently have near-perfect monopolies on publicly raised funds. Of course, there is a third

option to transfer to another public school district. In this case the teacher would technically be

moving employers, but would still be subject to all of the same state requirements. Moreover,

they may or may not be able to bring in their years of experience on the salary schedule,

potentially leading to a decrease in salary.

However, if a school system within the United States introduces competitive pressures

through school choice programs such as private school vouchers, tuition tax-credits, or public

charter schools, government employers would have less monopsony power. In other words, if the

monopoly on publicly raised funds is reduced, private and charter school employers would

experience increased abilities to recruit quality teachers to their schools. If more schooling

institutions are able to compete for talent in the labor market for education, conditions are

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[1] Table 208.20. Digest of Education Statistics.
https://nces.ed.gov/programs/digest/d15/tables/dt15_208.20.asp?current=yes

expected to improve for K-12 teachers. In order to attain the high quality teachers necessary for schools to thrive, private and public institutions alike would need to implement policies that make teachers feel respected as professionals. These policies could include higher salaries, job security, and job autonomy. In this system, high quality teachers would be able to seek the schools that treated them well, ultimately leading to financial rewards for schools that respected their employees.

While this idea has been discussed thoroughly in the field of economics, the point has been made very few times in education. Other education scholars have discussed the topic in theory, but have failed to test their hypotheses empirically. We offer what we know to be as the first empirical analysis examining the impact of public and private school choice programs on public and private school teacher salaries and employment opportunities. We expect that decreases in monopsony power in the education sector, through increases in access to school choice, will lead to increases in teacher salaries and the number of teaching jobs in the public and private sectors.

Literature Review

When considering the literature on the impact of school choice on teachers, it is important to first realize that teachers tend to look unfavorably upon school choice. Each year, the organization Education Next conducts a poll of Americans on various educational issues (West et al 2018). Among all types of school choice, teachers have higher unfavorable ratings. In 2017, for example, 39 percent of the general public supported charter schools and 36 percent opposed them. Among teachers, 40 percent supported and 51 percent opposed charter schools. When respondents were asked if they would support or oppose a universal voucher program in which government funds would be used to pay for private school tuition, 56 percent of the general

public opposed the idea. Meanwhile, 77 percent of teachers opposed the same idea. We see a similar trend in tax credit scholarships, homeschooling, and digital learning. In short, teachers tend to look upon programs that are outside the current norm less favorably than the general public.

There are numerous reasons why teachers may oppose school choice programs. First, there is an element of the unknown. School choice programs can add a level of uncertainty. This may be problematic, as it is assumed that teachers are relatively risk averse (Davis 1994; Wagner, 2001). In an experiment with 65 aspiring teachers and 67 students pursuing other degrees, Bowen et al. (2015) found that teachers were relatively more risk averse than non-teachers. Dohmen and Falk (2010) reach a similar conclusion in their study conducted in Germany. They note, "In terms of personality and attitudes, there is a significantly negative correlation between willingness to take risks and the probability of selecting into the education sector." (p. 266). This finding is not altogether surprising as public sector workers have regularly been found to be more risk averse than private sector workers (Bellante & Link, 1981; Dohmen et al., 2005; Hartog et al. 2002; Masclet et al. 2009). Moreover, teachers tend to be women and women tend to be more risk averse (Dohmen & Falk, 2010; Eckel & Grossman, Hartog et al. 2002).

Bowen et al. (2015) note that this risk averse finding may have implications for merit pay or other reforms. Nadler and Wiswall (2011) reach a similar conclusion in their analysis of Minnesota's Q Comp merit pay program. They note that risk averse teachers, especially high paid ones, tend to oppose merit pay schemes. Roughly 46 percent of the general public are supportive of merit pay plans for teachers and 38 percent are opposed (West et al., 2018). In comparison, just 15 percent of teachers are in support and 78 percent are opposed. There are

certainly many factors that could lead to this strong opposition to merit pay. One of those factors, it seems, has to be the relative risk averseness of teachers. This may very likely also lead teachers to oppose school choice.

Teacher unions may also play a role in influencing teacher opinions related to school choice programs. All major teacher unions have position statements opposed to various school choice programs. For example, the nation's largest teacher's union, the National Education Association, states, "NEA opposes school vouchers because they divert essential resources from public schools to private and religious schools, while offering no real "choice" for the overwhelming majority of students" (NEA, 2018a). The union also states, "A pure voucher system would only encourage economic, racial, ethnic, and religious stratification in our society. America's success has been built on our ability to unify our diverse populations" (NEA, 2018b). This language is clear, the union opposes vouchers and they claim that vouchers are detrimental to public education.

Of course, there are more cynical views of union opposition to school choice. Moe (2001) argues that the arguments against school choice made by the unions are largely irrelevant. That is, it does not really matter if school choice has negative or positive impacts on students, school choice is bad for unions. He writes, "For the overriding fact is that choice-based reforms naturally generate changes that are threatening to the fundamental interests of unions—and the unions, quite predictably, are opposed. Much of their political activity over the last decade has been dedicated to the simple goal of blocking school choice" (p. 178). It is much easier for a union to capture the labor market when they must gain control over one large district than when they must win over many small schools.

Effects of Monopsony

While unions may be negatively impacted by school choice programs, it is not entirely clear what might happen to teachers. Currently, public school districts have a near monopsony on jobs. This is especially true in large districts where there are few school choice options. Monopsony can have a potentially negative effect on labor markets. In England and Wales, for example, there were persistent teacher shortages between 1948 and 1973 (Dahlby, 1981). Dahlby (1981) suggests, "the monopsony model must be judged as the superior explanation of the persistent shortage" during this period (p. 315). Here, wages were set essentially at the national level. Local schools could not adjust their salary to attract more teachers. As such, there were shortages.

Monopsony has been shown to have a similar effect in the jobs of other government agencies and fields. For instance, Devine (1969) examined job vacancy data for registered nurses, policemen, and teachers in Los Angeles. He concludes that monopsony contributes to shortages in each of these fields. Part of the problem is parity, or equal pay, for all jobs. If the police department wanted to pay more to attract 200 teachers, he notes, the department would have to pay all policemen more. In fact, Los Angeles would have also had to raise the pay for firemen at the time, because rules stipulated that they were to be paid at the same rate.

Theory

Public and private school choice programs introduce two important types of competitive pressures into the education system that ought to lead to a better working environment for teachers overall. When school choice is introduced the traditional public school monopoly on publicly raised funds is weakened, leading to more power in the hands of children and parents. This means that individual schools must compete with one another for students. Moreover, the

increase in the number of options available to families leads to more employment choices for K-12 teachers. In other words, individual schools must compete with one another for talent.

If individual families care about the working conditions of their teachers, they will select schools that treat their employees fairly. After all, self-interested parents understand that teacher job satisfaction should lead to improved outcomes for their own children. Also, even if parents did not care about the well-being of teachers, they have an incentive to choose schools that improve the lives of children. Schools that can attract the best teachers will obviously be more able to lead students towards lifelong success. In order for schools to attract the best teachers, they can entice the labor market with things like higher salaries, performance pay, and small class sizes.

Perhaps more importantly, the introduction of a school choice program reduces the amount of monopsony power held by the employer of traditional public schools. Since the government is the sole employment option for about ninety percent of teachers in the current system, educators do not have a large variety of employment options available. On the other hand, a system with a larger number of employment options will grant power to the labor market of teachers. If an individual private or public school is not giving teachers the package of benefits they desire, they will be less likely to attract high quality educators, and as a result, will be financially harmed in the long run. Alternatively, if individual schools reward teachers for a job well done and provide a robust benefits package, they will attract the best teachers and improve profits.

As discussed in the economics literature, the monopsony scenario allows the monopsonist employer to pay lower wages and employ fewer workers than the perfectly competitive scenario (Bhaskar & Manning, 2002; Boal & Ransom, 1997; Manning, 2003; Robinson, 1933). Because

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of this, an introduction of competition into the market for employees raises overall wages and increases the number of jobs available. We expect this to occur in the teacher labor market as well when school choice is introduced.

We expect that school choice programs will increase teacher salaries in public schools since all rational educators prefer more money to less when given the option. Furthermore, public schools will have a financial incentive to keep as many students as possible since their funding formulas are based on student enrollment counts. In order to keep as many students as possible, public and private schools have the incentive to attract and retain high quality educators with higher salary levels. Salary levels should also improve for teachers in private schools, as school choice programs increase funding for private schooling.

We also expect the number of teaching jobs in private schools to increase since private school choice programs increase the demand for private schooling. Public charter school laws should increase the number of teaching jobs in the public sector, especially since public charter schools are often more efficient with resources than district schools. Competitive pressures from private school choice programs would also increase the number of teaching jobs in public schools if public schools attempt to remain in control of the market for high quality educators.

Data

We employ data from two main sources in order to examine effects in the public and private sectors. We first explain the data used for the public school sector and then discuss the data employed for the private sector.

Public School Teacher Jobs and Salaries

We combine data from the Common Core of Data Local Education Agency (School District) Finance Survey[2] (F-33) and the National Center for Education Statistics Elementary / Secondary Information System[3] for each fiscal year from 1995 to 2014. The Common Core of Data finance survey allows us to access public school salary expenditures for overall instruction and regular teachers, while the Elementary and Secondary Information System grants us access to the number of full time teachers and students in public schools. Across the twenty year study period, we are able to follow and analyze around 13,780 individual school districts.

We identify whether a specific school district is subject to a voucher program and/or tax-credit scholarship program in each year by using publicly available data at the EdChoice[4] website. We identify whether a given school district is located in a state with a charter law passed in each year using information from the National Alliance for Public Charter Schools website.[5] Descriptive statistics for the sample of public school districts can be found in Table 1 below.

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[2] Local Education Agency (School District) Finance Survey (F-33) Data. Common Core of Data. https://nces.ed.gov/ccd/f33agency.asp
[3] Elementary / Secondary Information System. National Center for Education Statistics. https://nces.ed.gov/ccd/elsi/tableGenerator.aspx
[4] School Choice in America Dashboard. EdChoice. https://www.edchoice.org/school-choice/school-choice-in-america/
[5] Charter School Data Dashboard. National Alliance for Public Charter Schools. http://dashboard.publiccharters.org/Home/?p=Home

Table 1: Descriptive Statistics (Public)

Variable	N	Mean	Within District Std. Dev.	Min	Max
Instructional Salary	297,657	11,500,000	16,600,000	1000	9,140,000,000
Regular Salary	128,080	9,610,955	4,087,635	1000	4,180,000,000
Full Time Teachers	282,571	196	3,234	0.01	70,889
Voucher	312,934	0.15	0.16	0.00	1.00
Tax Credit	312,934	0.18	0.20	0.00	1.00
Charter	312,934	0.80	0.22	0.00	1.00
Fiscal Year	372,580	2005	5.77	1995	2014
Student Membership	290,056	313,159	7,084,375	0.00	1,550,000,000

Private School Teaching Jobs

We use data from the nationally representative Private School Universe Survey (PSS)[6] from the school year 1999-00 to 2013-14. The target population for this survey is all private schools in the United States as defined by National Center for Education Statistics. Since the database contains unique school IDs for each period, we are able to follow individual schools over time. Since the survey is completed every other school year, we use eight periods of data. As shown in Table 2 below, we use three periods before voucher program enactment and two periods of data afterwards. We identify whether a given private school is subject to a voucher program in each year by using publicly available data at the EdChoice[7] website. Descriptive statistics for the sample of private schools used can be found in Table 3 below.

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[6] Private School Universe Survey. National Center for Education Statistics.
https://nces.ed.gov/surveys/pss/tableswhi.asp
[7] School Choice in America Dashboard. EdChoice. https://www.edchoice.org/school-choice/school-choice-in-america/

Table 2: Timeline of PSS Data Used

Program	2000	2002	2004	2006	2008	2010	2012	2014
CSP (Indiana)				Y	Y	Y	Y	Y
OSP (D.C.)	Y	Y	Y	Y	Y			
LSP (Louisiana)			Y	Y	Y	Y	Y	

Note: "Y" indicates that a period is used. Thick black vertical lines indicate the period of voucher program enactment.

Table 3: Descriptive Statistics (Private)

Variable	N	Mean	Within School Std. Dev.	Min	Max
Teachers (Total)	5570	13.74	6.94	0	151
Teachers (Full Time)	5570	14.32	10.79	0	183
Voucher	5774	0.38	0.45	0	1
Year	5774	2009	2.56	2000	2014
Enrollment	5750	221	98	1	1,745
White (Percent)	5750	77	14	0	100
Regular	5750	0.84	0.20	0	1
Co-ed	5750	0.97	0.05	0	1
Religious	5750	0.42	0.37	0	1
Louisiana	5774	0.33	0	0	1
D.C.	5774	0.08	0	0	1

Methods

Public School Teacher Jobs and Salaries

We use a district and year fixed effects regression approach of the form:

$$Outcome_{it} = \beta_0 + \beta_1 ChoiceProgram_{it} + \alpha_i + \varepsilon_{it}$$

Where *Outcome* is one of the three dependent variables of interest for public school district *i* at time period *t*. Our three dependent variables of interest are: total instructional salary expenditures, regular teacher salary expenditures, and the number of full-time teachers within a given school district, *i*, in period *t*.

The three independent variables of interest are captured by the vector *ChoiceProgram*. These three binary variables take on the value of one if the given school district is located in a state with a school choice law or program during the given period. We examine the impacts for the presence of a voucher program, a tax-credit scholarship program, and a charter school law. In the models examining the relationship between choice programs and salary expenditures, we also control from number of full-time teachers employed. By doing this, we can isolate the impacts of choice programs on instructional salary expenses from the impacts on employment. After all, increases in employment would lead to higher salary expenses regardless of changes in individual salary levels.

We do not control for factors such as student enrollment or class size for two reasons: (1) these types of school attributes do not change much within districts from year to year, and we use year and district fixed effects, and more importantly (2) school attributes such as student enrollment are a direct result of the competitive environment they face. Thus, holding these attributes constant would control away the treatment. Indeed, including any school attributes affected by the overall school choice competitive environment would bias our coefficients towards zero. In theory, including all such characteristics would ensure that all coefficients were zero. We also run a model using random effects regression as a robustness check.

Private School Teaching Jobs

We use a school and year fixed effects regression approach of the form:

$$Outcome_{it} = \beta_0 + \beta_1 Voucher_{it} + \alpha_i + \varepsilon_{it}$$

Where *Outcome* is one of the two dependent variables of interest for school i at time period t. Our two dependent variables of interest are the number of teachers overall and the number of full-time teachers within a given school, i, in period t.

Voucher is the independent variable of interest, whether or not the institution was located in an educational market that had a voucher program in place, for school i in period t. We expect that the coefficient of interest, β_1, will be positive, indicating that a voucher program environment increases the number of public school teaching jobs.

Again, since many observable characteristics of schools can be argued as relatively constant over time, we present results for the year and school-level fixed-effects models without time-variant controls. In fact, including any controls at all would bias our estimates towards zero since we simply wish to observe the impact of the market environment on school-level characteristics. In other words, any characteristic of a school is an outcome of the school's competitive environment. Most importantly, our methods allow us to compare individual schools to themselves, over time, as they switch into voucher settings. We also use a random effects regression model as a robustness check.

Results

We first present results for the effects of public and private school choice competition on the number of jobs and levels of salaries for teachers in the public school sector. We then present results for the effects of private school choice programs on private school teaching jobs.

Public School Teacher Jobs and Salaries

As shown in Table 4 below, teacher salaries and jobs increase when public school districts are faced with competitive pressures from private school choice programs. Specifically, districts switching into private school voucher program environments spend about $1.7 million more – or about a tenth of a standard deviation more – on instructional salaries after controlling for the change in the number of full-time teachers. In addition, switching into voucher program environments is also associated with 22 more teachers per district. This is an increase of around

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7 percent of a standard deviation. Facing competition from a tax-credit scholarship program is associated with about a 3 percent of a standard deviation increase in instructional salaries, an 8 percent of a standard deviation increase in regular teacher salaries, and a 4 percent of a standard deviation increase in the number of full-time teachers employed.

Unexpectedly, each coefficient on charter school law enactment is negative. However, the effect is not statistically significant for instructional salaries or the number of full-time teachers in the traditional public school district. This model suggests that the enactment of a charter school law is associated with around a 13 percent of a standard deviation reduction in salaries for regular teachers after controlling for changes in the number of teachers employed. These results may be because the monopsonist employer – the government – has the power to generate significant barriers to entry for those who wish to start public charter schools. After all, charter schools must be initially authorized and renewed periodically. Furthermore, charter school laws may grant the government additional monopsony power if they indirectly reduce competition from non-government private schools.

Table 4: The Effect of Voucher Programs on Public Teaching Jobs and Salaries (FE)

	(1) Instructional Salary	(2) Regular Teacher Salary	(3) Full Time Teachers
Voucher	1681389.898***	121488.100	22.010***
	(0.000)	(0.223)	(0.000)
Tax Credit	470361.984**	325024.198***	14.062***
	(0.008)	(0.001)	(0.000)
Charter	-330477.230	-510736.758**	-4.310
	(0.079)	(0.003)	(0.252)
Full Time Teachers	-7288.867***	161.863***	
	(0.000)	(0.000)	
Constant	7732050.392***	8086703.273***	157.865***
	(0.000)	(0.000)	(0.000)
R^2 Within	0.0445	0.0172	0.0012
N	265912	119994	275694

Note: P-values in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models use district and year fixed effects regression. These results are identical to the random effects regression model.

Private School Teaching Jobs

As shown in Tables 5 and 6 below, switching into a voucher program environment is associated with higher levels of teacher employment within private schools. The model controlling for private school characteristics finds that switching into a voucher period is associated with about 6 to 7 more teachers per school, depending on the method used. This effect is equivalent to around a full standard deviation increase in the total number of teachers within private schools. In addition, voucher program environments are associated with around 1.0 (9 percent of a standard deviation) to 3.8 (35 percent of a standard devation) more full-time teachers per school, depending on the model used. However, the result of the model using fixed effects regression is only marginally statistically significant at a p-value of 0.082. This suggests that while private

school choice programs are increasing overall employment, private schools may be using the

additional resources to employ part-time teachers.

Table 5: The Effect of Voucher Programs on Private Teaching Jobs (No Controls)

	(1) Teachers (FE)	(2) Teachers (RE)	(3) Full Time Teachers (FE)	(4) Full Time Teachers (RE)
Voucher	**6.983***	**6.866***	**0.921**	**2.874***
	(0.000)	**(0.000)**	**(0.111)**	**(0.000)**
Constant	22.304***	21.079***	13.930***	14.184***
	(0.000)	(0.000)	(0.000)	(0.000)
R^2 Within	0.1403	0.1401	0.0023	0.0013
N	5570	5570	5570	5570

Note: P-values in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models include school and year fixed effects. Columns 2 and 4 use random effects regression, while columns 1 and 3 use fixed effects regression. These results are robust to a model controlling for changes in student racial composition, religiosity of the school, whether the school was co-ed, and whether the school was specialized.

Table 6: The Effect of Voucher Programs on Private Teaching Jobs (Controls)

	(1) Teachers (FE)	(2) Teachers (RE)	(3) Full Time Teachers (FE)	(4) Full Time Teachers (RE)
Voucher	**5.698*****	**6.992*****	**1.048**	**3.842*****
	(0.000)	**(0.000)**	**(0.082)**	**(0.000)**
White	0.003	0.044***	0.010	0.023***
	(0.807)	(0.000)	(0.207)	(0.001)
Regular	3.040***	6.024***	3.390***	5.250***
	(0.000)	(0.000)	(0.000)	(0.000)
Religious	2.737***	1.244**	-0.301	-1.654***
	(0.000)	(0.010)	(0.438)	(0.000)
Co-ed	4.991	-11.785***	5.367**	-10.157***
	(0.091)	(0.000)	(0.009)	(0.000)
Constant	13.174***	24.070***	5.310*	19.163***
	(0.000)	(0.000)	(0.014)	(0.000)
R^2 Within	0.1506	0.1375	0.0148	0.0064
N	5570	5570	5570	5570

Note: P-values in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models include school and year fixed effects. Columns 2 and 4 use random effects regression, while columns 1 and 3 use fixed effects regression.

Conclusion and Policy Implications

This is the first study to evaluate the effects of public and private school choice programs on

teacher salaries in public schools and teacher employment in public and private schools. While

many scholars point out that school choice could be a departure from the traditional public

schools' monopoly on public funding, very few claim that school choice programs could also

help teachers by increasing competition for the consumers of the education labor force (i.e. the

schools). Using various econometric techniques, we find robust evidence to suggest that private

and public school choice programs could have moderate positive effects on teachers by reducing monopsony power.

This evidence suggests that expansion of both private and public school choice programs could increase teachers' salaries and the number of teaching jobs in the United States. Policymakers could benefit the teaching force by enacting and expanding policies such as vouchers, Education Savings Accounts, tax-credit scholarships, and public charter schools. Of course, much more research is needed to validate our study's findings. It would be beneficial for researchers to use teacher-level data to further test the current study's hypothesis.

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