SHOW-ME INSTITUTE
WHERE LIBERTY COMES FIRST

ESSAY

AUGUST 2017

IS MISSOURI'S TEACHER PENSION SYSTEM UNFAIR?

By James V. Shuls

INTRODUCTION

"They should pay their *fair share*." It sounds simple enough, but there's a problem: It's hard to get people to agree on exactly what *fair* means. In this essay, I examine whether the Public School Retirement System (PSRS) distributes funds fairly. Accordingly, I must first establish a working definition of *fair*.

For present purposes I define fairness in terms of the correspondence between what a teacher contributes to her pension system and what she receives from it. We should expect differences in teacher pension benefits, because teacher compensation is different among school districts. I am concerned primarily with differences in pension benefits that are caused by the pension system itself. In other words, *fairness would dictate that individuals receive benefits from their pension plan commensurate with their contributions to that plan*. One teacher should not receive more or less than a counterpart who made comparable contributions simply because of the structure of the system. Similarly, a pension system would be fundamentally *unfair* if it awarded greater benefits to a teacher who contributed less to the pension fund than a teacher in a different school district.

There are, of course, other lenses through which we could evaluate pensions. Looking at equity across

generations, we could examine whether each generation pays for its own retirement. We could also examine equity issues by determining whether individuals who work a different number of years receive benefits in accordance with the amount of time they have worked. On this matter, the research is clear that most defined-benefit pension systems favor individuals who stay for a full career over those who do not.[1] Many systems also favor those who stay in one system over those who move between different pension systems. A teacher who works 15 years in the PSRS and then moves to the Saint Louis school district, for example, would earn less than half as much in her pension as she would if she stayed put in PSRS.[2]

Defenders of the pension systems might suggest these features are there for a reason. No one would suggest, however, that favoring wealthy school districts over poor school districts serves a public purpose. That is the issue addressed in this paper.

In this essay, I summarize the findings of my forthcoming paper in the *Journal of Education Finance*, "Examining Inequities in Teacher Pension Benefits."[3] In that paper I explain how the design of the pension system favors some individuals over others. Here, I lay out the principles that govern the system and then present specific data from my *Journal of Education Finance* analysis of 464 Missouri school districts. The key takeaway is that the shape of a school district's salary schedule—its slope and curvature—can have significant implications for teacher retirement, as it affects both contributions to the pension fund and benefits.

This new research suggests that, judged by the definition of fairness I presented earlier, Missouri's teacher pension systems are unfair because they allow some individuals to receive significantly more in pension benefits than other teachers who have made have made similar contributions over their careers. Moreover, the teachers who benefit most from the pension plan (relative to their contributions) tend to be concentrated in the wealthiest school districts. In this sense, the pension system is compromising the equity or fairness of the school funding system.

THE SLOPE OF THE SALARY SCHEDULE

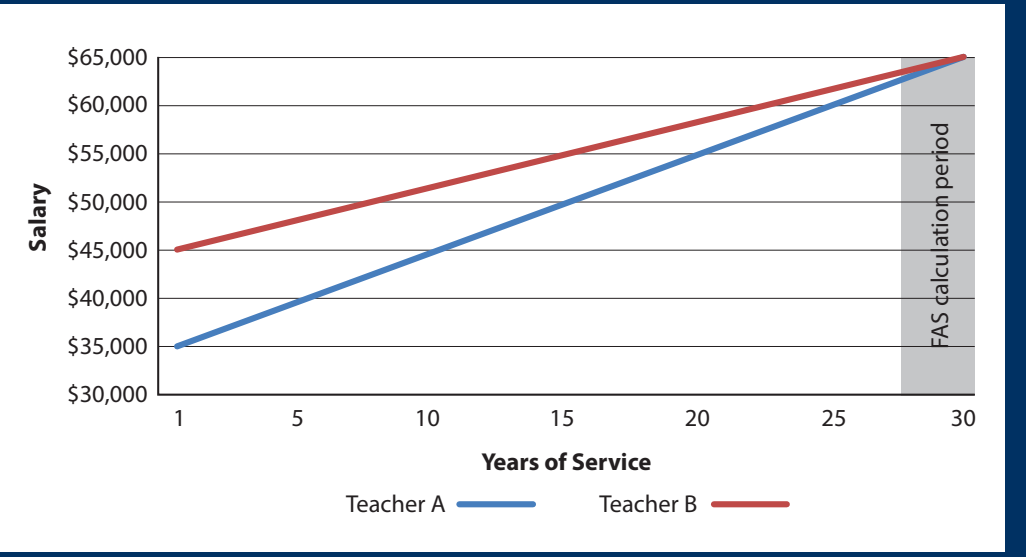
A few examples help illustrate how the shape of the salary schedule impacts benefits. First, let's imagine that two teachers begin working at the same time. Teacher A's salary starts at $35,000 and Teacher B's at $45,000. While each teacher works for 30 years and retires at the same time, over the course of their careers Teacher A gets larger raises ($1,034 annually) than Teacher B ($690 annually) such that in their 30th year, they each make $65,000. With a lower starting salary but the same final salary, we would say that Teacher A has a "steeper" earnings trajectory (Figure 1).

In PSRS, a teacher and her district each contribute 14.5 percent of the teacher's annual salary, a combined 29

Figure 1

Two Hypothetical Earnings Trajectories with Different Slopes

The steeper a teacher's earnings trajectory, the more (s)he will earn in benefits relative to contributions to the pension fund.



percent. Every year until the end of their careers, Teacher B will earn more and contribute more to the retirement fund than Teacher A. This, however, does not matter when it comes to determining benefits. PSRS only uses the three highest consecutive salaries to determine a final average salary (FAS) for pension calculations. Despite paying $43,500 more into the system, Teacher B will receive almost the same amount of benefit as Teacher A (Table 1). As this example shows, individuals with steeper earnings trajectories from their starting salary to their FAS benefit more from the current system.

Table 1: **Contributions and Benefits for Two Hypothetical Earnings Trajectories with Different Slopes**[4]

Salary Structure	Total Pension Contributions	3-Year Final Average Salary	Annual Pension Benefit (FAS x 30 x 2.5%)
Teacher A	$435,000	$63,966	$47,974
Teacher B	$478,500	$64,310	$48,233

THE CURVE OF THE SALARY SCHEDULE

Now consider two hypothetical earnings trajectories with the same starting salary and ending salary (Figure 2). Note that they have the exact same slope from their starting salary to their final salary. The major difference between the two is the curve of the earnings line; one is a back-loaded line and the other is a front-loaded line. In this scenario, the teacher with the front-loaded earnings curve will earn larger raises at the beginning of her cancer, but the rate of her raises will taper off at the end of her career, meaning that she will earn significantly more (and contribute significantly more into her retirement system) until the very end of her career. The teacher with the back-loaded line will experience smaller raises earlier in her career but see bigger jumps later. Despite contributing nearly $100,000 more to the pension

Figure 2

Two Hypothetical Earnings Trajectories with the Same Slope but Different Curves

Back-loaded salary structures are rewarded by the current pension system.

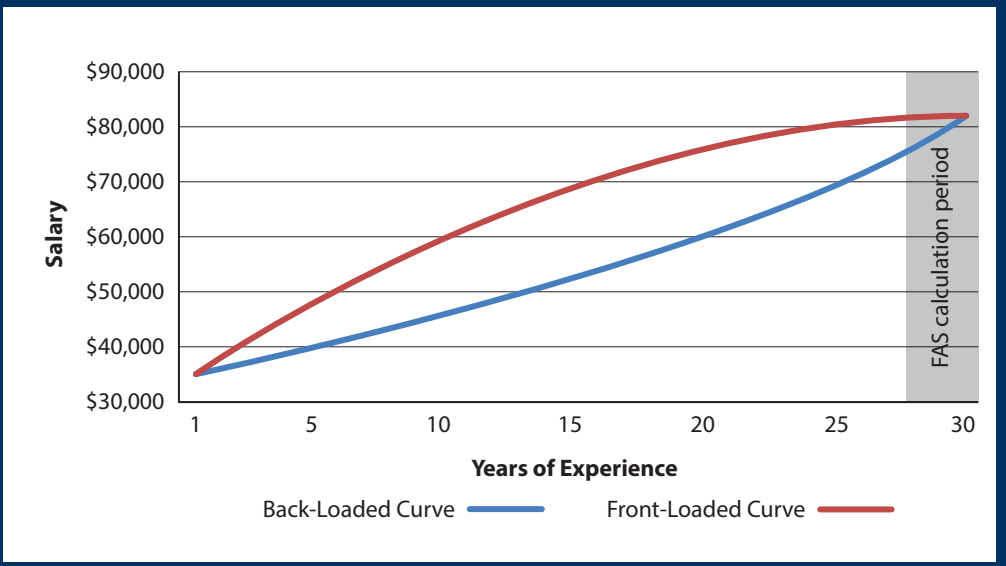


Table 2: **Contributions and Benefits for Two Hypothetical Earnings Trajectories with Different Curves**[5]

Salary Structure	Total Pension Contributions	3-Year Final Average Salary	Annual Pension Benefit (FAS x 30 x 2.5%)
Back-Loaded Curve	$482,891	$80,101	$60,076
Front-Loaded Curve	$575,293	$82,334	$61,751

system over the course of her career, the teacher with the front-loaded curve will earn only slightly more ($1,675 annually) in retirement than her peer with the back-loaded earnings curve (Table 2).

Again, this disparity exists because the pension plan calculates benefits based on a three-year FAS. It does not matter who contributes more to the system over the course of her career—only who earns more in the final three years. Teachers who have back-loaded salary schedules, such as those that give percentage increase raises, are rewarded by the current pension system. Conversely, teachers whose salary schedules front-load pay receive less in retirement relative to the amount of money they invest in the retirement plan.

THE SLOPE AND THE CURVE COMBINED

Now let's consider both of these aspects together. Take a look at Figure 3. Let's imagine that the three lines represent three different teachers. They all start out at the same salary, work for 30 years, make the same amount of money in total, and pay similar amounts into the pension system. The only difference is *when* they make their money and contribute to the retirement system. One individual gets a three percent raise every year (back-loaded curve), the second gets the same dollar amount raise every year (straight line), and the third has a salary that is front-loaded with large increases in the first five years and smaller ones thereafter (front-loaded curve).

Figure 3

Three Hypothetical Earnings Trajectories

A sharply front-loaded salary structure can be extraordinarily harmful to pension benefits under the current system.

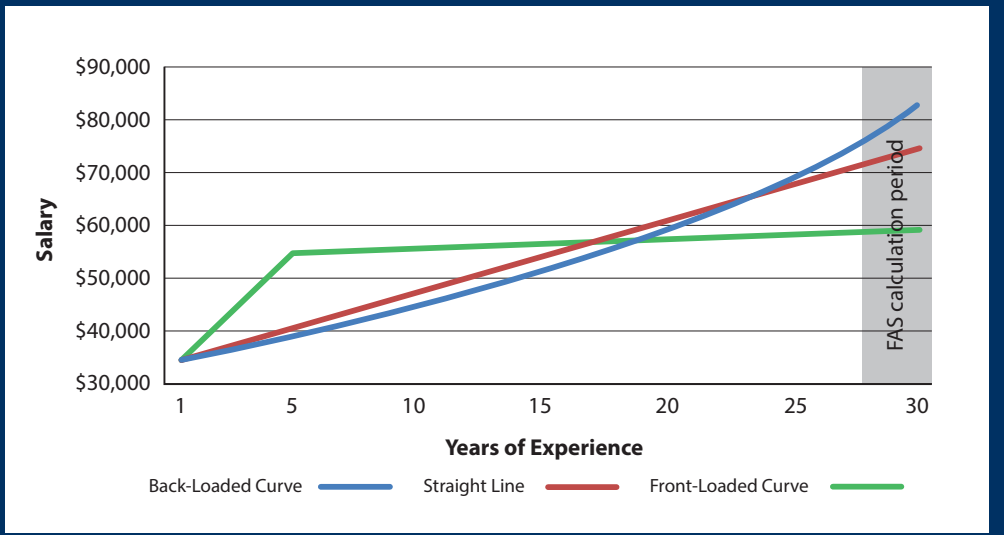


Table 3: **Contributions and Benefits for Three Earnings Trajectories**[6]

Salary Structure	Total Pension Contributions	3-Year Final Average Salary	Annual Pension Benefit (FAS x 30 x 2.5%)
% Increase (back-loaded)	$482,890	$80,101	$60,076
$ Increase (straight line)	$482,890	$74,595	$55,946
Front-Loaded	$482,891	$59,810	$44,858

Despite paying nearly identical amounts into the retirement plan, these three teachers would earn considerably different amounts in retirement. The teacher with the three-percent increase schedule would have the steepest earnings trajectory and the curve would be back-loaded. As a result, she would receive the highest benefit, $60,076 per year. The teacher who received the same dollar amount raise each year would receive an annual pension benefit of $55,956. Meanwhile, the teacher with the front-loaded salary, which has the lowest slope and is front-loaded, would receive just $44,858. This is more than a $15,000 difference between two individuals who contributed the same amount of money to the pension fund (Table 3).

This system appears to violate the definition of fairness outlined at the beginning of this paper. Yet, the problem is considerably worse when we consider compound interest. At the time of retirement, the contributions of the teacher with the front-loaded salary would be worth substantially more than those of both of her peers. She earned more at the beginning of her career and thus contributed more to the retirement system. These contributions then earned interest over a longer period. In short, the disparity is even larger than it initially appeared.

INEQUITIES IN TEACHER PENSION BENEFITS

When we understand how the shape of a salary schedule can affect a teacher's retirement benefits, it is easy to see how the system may favor one individual over another. Indeed, what I found in my forthcoming paper is that the system tends to favor Missouri's wealthy school districts at the expense of the poor. Wealthy schools tend to have steeper earnings trajectories compared to less-affluent school districts.

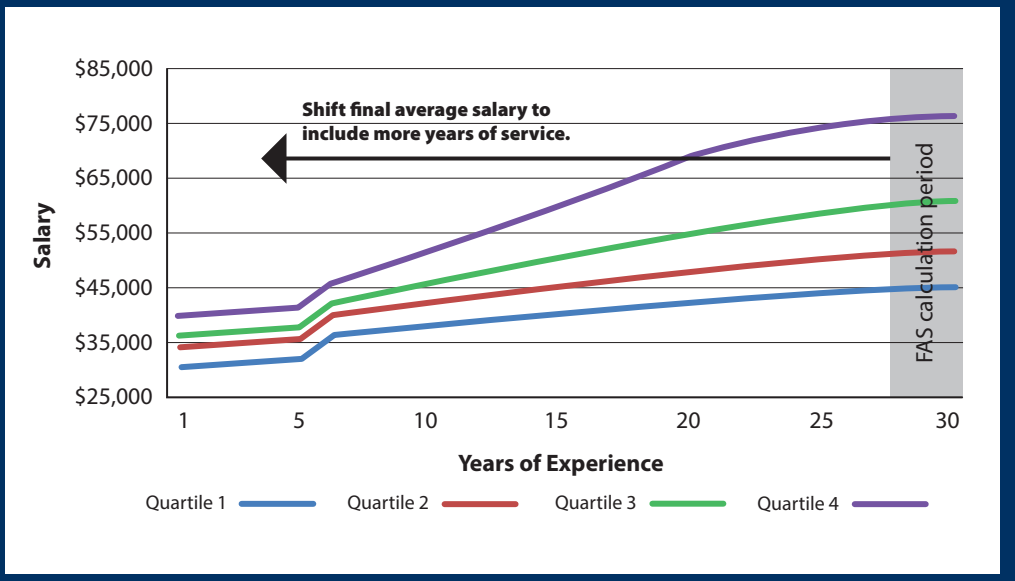
There is considerable variation in teacher salaries. Districts in more affluent areas tend to pay teachers more. These differences are particularly pronounced at the end of a teacher's career, exactly when the current pension system calculates benefits. Therefore, some teachers are getting disproportionately more out of their retirement than others. Below, I display results from my analysis of 464 Missouri school district teacher salary schedules. Figure 4 displays the average salary schedule for all school districts in Missouri, broken into four quartiles by the three-year FAS. The bump at five years represents the shift from the bachelor's schedule to the master's schedule.

The school districts in the four quartiles have similar but not identical shapes. Districts in Quartile 4, which has the school districts with the highest ending salaries for teachers, have the steepest earnings trajectory. Meanwhile, Quartile 1 has the flattest trajectory. In my paper, I note that the Quartile 1 school districts tend to be small, relatively poor school districts. Those in Quartile 4, on the other hand, tend to be more affluent suburban school districts.

Figure 4

Average Salary Schedule by Quartile (Weighted by FTE)

If the final average salary calculation factored in more years of service, benefits would be better aligned with contributions.



In the paper, I calculate what would happen if we shifted the FAS to include more years of service. For example, I calculate what a teacher who works for 30 years in a district would receive if the FAS were set at 3, 5, 10, 20, and 30 years. What I found should not be surprising. Changing this calculation while holding total benefits constant would lead to an increase in pension benefits for our poorer school districts and a decrease for our wealthier school districts. In other words, it would reduce the inequities in pension wealth caused by the system itself. It would make sure each person was getting their fair share. The more years you include in the FAS, the more the gap between wealthy and poor districts narrows.

PENSION WINNERS AND LOSERS

In my research paper, I only present the results grouped by quartiles. In Table 4 I present the biggest winners and losers in our current pension system. The winners are those that benefit the most with the current system and would stand to lose the most if we considered a teacher's full career (30 years) in the FAS calculation. The losers, on the other hand, represent the school districts that lose in the current pension system and would benefit the most if we included more years of service when calculating the FAS

SOLUTIONS

The current pension system favors some individuals over others, and some districts (generally wealthier) over others (generally poorer). This system might be rationally defensible if there were a justifiable reason to favor those individuals and districts. The transfer of wealth from short-timers to individuals who work a full career, it could be argued, incentivizes longevity. The examples presented here, however, are difficult to justify. They do not promote good governance or sound policy in terms of teacher pay. They incentivize back-loading of teacher salaries. Moreover, the system favors wealthy school districts that can fund a steep salary schedule at the expense of less-affluent school districts. Based on the definition provided at the outset of this essay, Missouri's teacher pension system appears to be unfair.

To fix this fundamental unfairness, Missouri should shift to a system that aligns retirement benefits to retirement contributions. The system would be fairer to individual workers if their benefits were more aligned to their contributions. Below I present three ways in which this could happen. The three scenarios presented here offer methods by which the system could reduce the inequity caused by using a three-year FAS.

A Good Solution

PSRS could maintain the current defined-benefit FAS pension system but include a teacher's full career into the benefit calculations. This would reduce the interdistrict inequities caused by the structure of the pension system. It would, however, require reconsideration of how the multiplier is calculated.[7] Missouri could look at the Social Security system for lessons on how to put this policy into practice.

A Better Solution

PSRS could move to a hybrid system, which combines defined-benefit and defined-contribution plans. The defined-benefit portion would continue to provide a guaranteed monthly benefit, albeit smaller than the current system, to retirees. Meanwhile, the defined-contribution portion would be worth the value of the contributions plus interest. This would help smooth pension wealth accrual and increase portability for teachers, but it would not completely solve the problems outlined in this paper. The University of Missouri System moved to a hybrid system in 2012.[8] Washington State has also developed a hybrid plan for teachers (Teacher Retirement System Plan 3).[9]

Table 4: **Biggest Pension Winners and Losers, Comparison of 3-Year and 30-Year FAS**

School District	% FRL	Average Teacher Salary*	Enrollment*	Gains/Losses in Annual Pension Benefit from Current Pension System
Biggest Winners				
Rockwood R-VI	14.7	$60,139	21,140	$11,506
Fox-C6	32.6	$57,710	11,408	$6,673
Taneyville R-II	66.9	$35,948	150	$5,525
Ft. Zumwalt R-II	22.6	$52,638	18,002	$4,898
Clayton	13.8	$74,779	2,590	$4,786
Fairview R-XI	54.7	$37,600	455	$4,359
Lee's Summit R-VII	19.2	$57,225	17,739	$4,356
Kirkwood R-VII	14.1	$70,565	5,688	$4,195
Maplewood-Richmond Heights	46.9	$54,691	1,230	$4,011
Parkway C-2	19.8	$64,812	17,302	$3,725
Biggest Losers				
North Kansas City	48.6	$53,854	19,380	($4,702)
Belton 124	52.3	$49,011	4,659	($4,312)
Grandview C-4	77.5	$55,083	4,257	($4,264)
Chillicothe R-II	47.3	$45,448	1,855	($4,181)
Miami R-I	52.6	$35,711	176	($4,114)
Missouri City 56	41.7	$39,937	23	($4,020)
Gilliam C-4	52.4	$33,136	34	($3,890)
Craig R-III	55.1	$34,014	68	($3,773)
Center 58	77.5	$50,708	2,489	($3,376)
Lawson R-XIV	25.3	$43,351	1,127	($3,728)

*Percentage of students participating in the free/reduced lunch program. Data from Missouri Department of Elementary & Secondary Education's "District Report Card" for each district for the 2015–2016 school year.

FRL, free or reduced-price lunch program participants.

An Even Better Solution

The best solution for fixing the problems outlined in this essay is creating a defined-contribution plan for all new teachers and providing teachers in the current system the option to shift over to the new plan. A defined-contribution plan would fully align retirement benefits to retirement contributions. The plan would be portable, so individuals would not be punished when leaving the field early. These plans can provide retirement security to teachers in a fair manner.

CONCLUSIONS

In the current pension system for Missouri teachers (PSRS), teachers in wealthy districts tend to receive much more in benefits than those in poorer districts These teachers receive disproportionately more in their retirement than their peers not because of how much they put into the system but because of the structure of their district pay schedules. To fix this problem, Missouri needs to move away from the current three-year FAS defined-benefit pension system. This could be done by shifting to a full-career defined-benefit model or by shifting to a defined-contribution model, which ties benefits directly to contributions. Until then, some Missouri teachers will continue to get a raw deal.

James V. Shuls, Ph.D. is a distinguished fellow of education policy for the Show-Me Institute and is an assistant professor of educational leadership and policy studies at the University of Missouri-St. Louis.

ENDNOTES

1. Koedel, Cory, Shawn Ni, Michael Podgursky, and P. Brett Xiang. (2014). Missouri charter schools and teacher pension plans: How well do existing pension plans serve charter and urban teachers? *Ewing Marion Kauffman Foundation*. View online at: http://www.kauffman.org/~/media/kauffman_org/research%20reports%20and%20covers/2014/02/missouri_charter_schools_and_teacher_pension_plans.pdf.

2. Ibid.

3. View the working paper online at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2714495.

4. All figures are unadjusted.

5. All figures are unadjusted.

6. All figures are unadjusted.

7. The pension benefit formula is: Benefit = Final Average Salary × Years of Service × Multiplier.

8. Steyer, Robert. (2012). University of Missouri to introduce hybrid retirement plan. *Pension and Investments*. View online at: http://www.pionline.com/article/20120109/PRINT/301099976/university-of-missouri-to-introduce-hybrid-retirement-plan.

9. TRS Plan 3 Handbook. View online at: http://www.drs.wa.gov/member/handbooks/trs/plan-3/t3hbk.pdf.

SHOW-ME INSTITUTE
WHERE LIBERTY COMES FIRST

5297 Washington Place I Saint Louis, MO 63108 I 314-454-0647
3645 Troost Avenue I Kansas City, MO 64109 I 816-561-1777

Visit Us: showmeinstitute.org
Find Us on Facebook: facebook.com/showmeinstitute
Follow Us on Twitter: twitter.com/showme
Watch Us on YouTube: youtube.com/showmeinstitute