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Understanding the Impact of School Finance Reforms: Where the Research Falls Short

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Abstract:

This capstone answers the following questions: What is the current literature missing in its analysis of school finance reform? How can researchers improve their approach in order to give a better sense of what makes reforms successful? In pursuit of answers, I conduct a critical review of the literature examining school finance reform, attempting to show that this literature maintains too narrow a focus on per-pupil spending. I endeavor to show why the literature on school finance reform, as it currently stands, should not be taken as the final word on the success or failure of these reforms. By thoroughly examining the existing research and pointing out its oversights, I demonstrate that scholars have likely missed critical ingredients that help to make or break school finance reforms. The goal of this demonstration is to convince readers that we do not know whether more money in education leads to better student performance. I also attempt to highlight the pervasiveness of dollar-centric analyses in the current school finance reform literature, and to elucidate the potential benefits of more comprehensive analyses that look at both financial and non-financial reforms as complementary tools.

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Understanding the Impact of School Finance Reforms: Where the Research Falls Short

Yale University Education Studies Program

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Introduction

Much of the debate around education reform over the past several decades has centered around school finance. Broadly speaking, school finance reform is concerned with the amount of per-pupil funding that schools receive from the state, making it an easily quantifiable metric that reformers can use to highlight disparities between wealthy and poor, majority white and majority minority schools. The intuitive appeal of school finance reform—the notion that more funding per-pupil will lead to better educational outcomes—is clear and therefore has resulted in nationwide efforts to litigate increased funding for the country's neediest students. Subsequently, a wide body of literature has developed to assess the effects of these efforts, attempting to determine whether school finance litigation and the resulting reforms actually produce better student outcomes. But this literature has yet to provide a clear answer regarding whether increases in funding lead to corresponding increases in student performance. This capstone attempts to explain why, despite plentiful analyses, we still know very little about when and how more money leads to better performance.

The main reason the literature examining school finance reform is indeterminate is that it suffers from its own myopic perspective. It is myopic in that it focuses somewhat simplistically and almost exclusively on quantifiable metrics—primarily per-pupil expenditure and its effect on test scores—at the expense of a more holistic picture that better captures the myriad factors contributing to student performance. By ignoring or downplaying other educational inputs—such as accountability measures, standards, testing, charter schools, administrative structuring, localized spending discretion, and special education—that may contribute to the success or failure of school finance reforms, and by skipping over the processes by which educational inputs lead to better student outcomes, scholars miss the opportunity to discover critical

information regarding potential interaction effects between school finance reform and other types of reform. This capstone draws attention to the literature's myopia as it currently stands, and it recommends alternative research methodologies that can help us better understand what goes into making school finance reforms successful. It begins by focusing on the larger body of school finance reform literature, marking out the general trends that have contributed to our current lack of understanding. Its scope then narrows to focus on the literature concerning Massachusetts—a well-documented and much researched case study in school finance reform—to exemplify how the myopia afflicting the broader literature also exists in more limited case studies. In so doing, this capstone illuminates the shortcomings of past scholarship and highlights a path forward that can lead us to a more comprehensive understanding of how to improve student achievement through financial reforms.

In clarifying my objective for this capstone, it will be helpful to say outright what I do not attempt to do. I do not attempt to show conclusively one way or the other whether school finance reform impacts student achievement. As will be described below, researchers have attempted to do this many times over and have met with little definitive success. In addition, I do not attempt to prove the efficacy of any particular education reform. Rather, I seek to criticize the current literature on school finance reform by arguing that it has failed to consider financial reforms within the broader landscape of educational reforms, and that due to this failure we know very little about why the success of school finance reform varies between and within states. Finally, I do not attempt to argue that education researchers should avoid using quantifiable data to evaluate the success of education reforms. Instead, I seek to problematize the simplistic input-output measure of success that is present in much of the research on education reform, and I

propose various alternatives that would allow researchers to more accurately capture the variables they hope to measure.

That all said, it would be presumptuous to criticize education researchers without first taking time to recognize the implicit difficulty of their task. The unfortunate truth is that it is incredibly difficult to isolate the effects of reforms in education, including school finance reforms (Case, 2006). Part of the difficulty in evaluating school finance reforms in particular is that they oftentimes vary significantly in form between states, and they are generally enacted alongside other reforms that may contribute to student achievement (Hoxby, 2001; Hanushek & Lindseth, 2008). To label as "school finance reforms" all legislative responses to judicial demands for educational equity or adequacy is to mask, somewhat, the multitude of approaches that states take, and to ignore other significant non-financial reforms that may occur alongside financial ones. To date, researchers have used countless innovative and creative strategies to achieve their ends, and this work must not be discounted. But sometimes it is the ends themselves that we must question if we are to see meaningful progress towards better understanding.

Such is the case in the contemporary literature on school finance reform. Researchers have maintained too narrow a focus on money's impact in education, neglecting to consider the impact of other important educational inputs. The current state of the literature is such that even when researchers find that school finance reforms improve average performance in some states and not others, it is an open question as to why different states experience divergent results (Jackson, Johnson & Persico, 2015; Lafortune, Rothstein & Schanzenbach, 2018). There is virtually no inquiry into how school finance reforms interact with other types of education reform, despite preliminary evidence showing that such interaction effects exist (Reschovsky &

Imazeki, 2001; Downes & Shah, 2006; Roy, 2011). And researchers examining school finance reform have generally confined themselves to considering only the impact of money in education. In so doing, they neglect other bodies of literature that show how schooling quality is the product not just of funding, but of myriad other non-financial inputs as well (see, e.g., Hanushek, 2003; Cascio & Schanzenbach, 2013; Deming *et al.*, 2014).

In addition, it is an open question as to whether school finance reforms work to improve student achievement among poor and minority students (Jackson, Johnson & Persico, 2015; Lafortune, Rothstein & Schanzenbach, 2018). Such inconclusive results give great cause for concern given that these reforms are often enacted in an effort to help these students in particular. As we continue to research the effects of school finance reform, it will be important to examine how poor and minority student achievement changes relative to statewide student achievement. It is pivotal that researchers determine whether these reforms are actually working to close gaps in achievement, to ensure that limited education resources are used to the greatest benefit of those most in need.

Scope of Research and Research Questions

This capstone answers the following questions:

What is the current literature missing in its analysis of school finance reform?

How can researchers improve their approach in order to give a better sense of what makes reforms successful?

In pursuit of answers, I conduct a critical review of the literature examining school finance reform, attempting to show that this literature maintains too narrow a focus on per-pupil spending. I endeavor to show why the literature on school finance reform, as it currently stands, should not be taken as the final word on the success or failure of these reforms. By thoroughly examining the existing research and pointing out its oversights, I demonstrate that scholars have likely missed critical ingredients that help to make or break school finance reforms. The goal of this demonstration is to convince readers that we do not know whether more money in education leads to better student performance.

I also attempt to highlight the pervasiveness of dollar-centric analyses in the current school finance reform literature, and to elucidate the potential benefits of more comprehensive analyses that look at both financial and non-financial reforms as complementary tools. The Massachusetts case study will serve as a case and point. It is an example that shows how the national school finance reform literature has influenced literature at the state level, thus inhibiting scholars' abilities to draw meaningful conclusions about school finance reform from the experiences of individual states. Given that there is significant evidence suggesting that Massachusetts' educational reforms have successfully improved student outcomes, this case study is illustrative of how scholars, by focusing too myopically on spending, have missed opportunities to learn more about the non-financial ingredients that may make school finance reforms successful.

Methodology

In researching the above questions, I have conducted a literature review of the national-level research on school finance reforms. In addition, I have conducted a similar critical analysis

on the literature examining Massachusetts' school finance reform efforts. I chose to examine the literature on Massachusetts because there is significant evidence suggesting that the state's landmark education reform, the Massachusetts Education Reform Act of 1993 (MERA), has successfully raised student achievement levels, at least in part due to its significant reforms to the state's school financing system (Guryan, 2001; Nguyen-Hoang & Yinger, 2014). I also chose to examine Massachusetts because MERA was far more than just legislation meant to reform the state's school finance system; it also included significant non-financial policy changes alongside its financial reforms (Chester, 2014). These two factors—the clear evidence of MERA's relative success and the passage of contemporaneous financial and non-financial reforms—make the literature on Massachusetts ideal for my analysis.

First, MERA's generally undisputed success should allow researchers to discern the conditions necessary for school finance reforms to lead to improvements in student outcomes. Presumably, with widespread agreement about the reform's success, there should be less debate about whether MERA was successful, and more inquiry into why it was successful. Findings to the contrary would serve to bolster my argument: that school finance researchers are more interested in inputs and outputs than they are in discovering the mechanisms by which inputs lead to outputs.

Second, I use Massachusetts to argue that state case studies have the potential to contribute meaningfully to the school finance reform literature by helping to discern interaction effects between financial and non-financial reforms. No researchers have yet fully explored the ways that non-financial reforms work to weaken or strengthen financial reforms. Massachusetts would appear to be a state where such research is possible, if not necessary, since MERA included several significant non-financial reforms that may have impacted the state's new school

finance mechanism. In addition to overhauling Massachusetts' school financing system, MERA introduced charter schools, created a new statewide standardized test, and adopted a new accountability and assistance system (Chester, 2014). I would hope to find at least some research examining the various ways that these policy changes interact with one another.

Literature Review

A Brief History of School Finance Reform

Over the past several decades, education reformers dissatisfied with legislative actors have sought to improve American education through the courts (Ryan, 2010; Driver, 2018). Though limited in their jurisdiction, judges were rightly believed to have some power over the quality of education that students receive, capable of intervening when legislators failed to provide the basic standards necessary for effective public schooling. In particular, after *Brown v. Board of Education* (1954), education advocates sought to create further equity in education by equalizing school funding between relatively rich and poor areas, which they theorized would help to eliminate some of the performance and outcome gaps between rich and poor and white and minority students (Schragger, 2008). More money, they believed, would yield better performance.

But unlike with school segregation and *Brown*, federal courts were essentially closed off as a means of achieving school finance reform due to a landmark Supreme Court ruling in *San Antonio Independent School District v. Rodriguez* (1973). The decision, written by the Nixon-appointed Justice Powell, declared that education, while an important resource, was not a guaranteed right under the Constitution (*Ibid*). Further, the opinion touted local control of education as a fundamental American tradition and declared that the Supreme Court must limit

its interference in order to preserve this tradition (Schragger, 2008). In response to this defeat, education reformers took to state courts in order to achieve greater equity in school funding (Ryan, 2010). The subsequent decades saw numerous state supreme courts declare school funding schemes unconstitutional under their state's constitution (Jackson, Johnson & Persico, 2015; Lafortune, Rothstein & Schanzenbach, 2018). These judicial rulings oftentimes led to significant school finance reforms at the state level (see, e.g., *Sheff v. O'Neill*, 238 Conn. 1, 678 A.2d 1267), which in many cases made funding schemes more equitable (relatively equal funding for all) or, in some instances, progressive (funding according to relative need) (Jackson, Johnson & Persico, 2015; Lafortune, Rothstein & Schanzenbach, 2018).

State supreme courts in 28 different states declared school funding schemes unconstitutional between 1971 and 2010 (Jackson, Johnson & Persico, 2015). Though these rulings generally resulted in significant reforms at the state level that changed the ways schools were funded, not all of them produced the same results. Indeed, as the school finance reform movement matured, litigants adopted new strategies to achieve reform, which produced different judicial remedies. Earlier lawsuits focused on equality of educational spending, highlighting large funding disparities between states' wealthiest and poorest districts. Litigants argued that these disparities were unconstitutional and that the funding between schools and districts should be equalized (Schragger, 2008). But as time progressed, it became clear that this strategy could lead to undesirable consequences when states, ordered to ensure equal funding between school districts, adopted policies that achieved funding equality through lower average funding—a "levelling down" of education spending whereby wealthier schools have their spending capped to match the levels of poorer schools (Hoxby, 2001). Early research on equality-focused school finance reforms also produced conflicting results (Hanushek, 1997). These disappointing

outcomes worked together to cast doubt on whether equality in school funding was a desirable goal.

As education reformers became disenchanted with the promise of funding equality, there began a shift towards a theory of "adequate" funding. Armed with research showing that poorer students require more resources to achieve parity with their wealthier peers, with plentiful examples of unsuccessful funding equality reforms, and with an eye towards outcomes as opposed to inputs, litigants began to argue that school funding schemes must provide every child with the opportunity to acquire an adequate education if they are to be constitutional (Schragger, 2008; Lafortune, Rothstein & Schanzenbach, 2018). The implication of this new wave of litigation was that equality of funding would not be sufficient; rather, states would be required to provide every school and district with the resources they need to ensure all students have the opportunity to achieve an adequate education (*Ibid*). In some instances, this meant that poor districts would receive significantly more state aid than wealthier districts (Lafortune, Rothstein & Schanzenbach, 2018). Though perhaps in theory this new adequacy argument allowed judges more flexibility in their rulings, very few used these cases as an opportunity to rule on areas of education policy beyond school funding schemes (see, e.g., *CCJEF v. Rell*, 2016, later overruled by the Connecticut Supreme Court). Indeed, most judges approached adequacy lawsuits in a similar fashion to earlier equality suits, focusing primarily on the ways that school funding policies inhibited students' opportunities to achieve an adequate education (see, e.g., *Rose v. Council for Better Education*, 1989; *McDuffy v. Robertson*, 1993; *Edgewood Indep. Sch. Dist. v. Meno*, 1995).

In many instances, litigation has occurred over the course of several decades, with states making multiple significant financial reforms as the lawsuits progressed (Lafortune, Rothstein &

Schanzenbach, 2018). Many states still face ongoing litigation (see, e.g., *Gary v. Snyder*, 2016). It is clear that, over the past several decades, school finance litigation has played an important role in shaping the education landscape across the country, and it continues to do so today. This litigation is often informed by the literature examining the effects of school finance reforms, and state legislatures are certain to look to research on school finance while implementing court mandated reforms. As such, it is critical that the available literature on school finance reform be thorough in its analysis, so that reformers, litigators, courts, and legislatures have evidence-based practices to help guide their decision making. The current state of the literature leaves far too much unanswered, a condition that contributes to significant disparities in the success of education reforms between states. This capstone attempts to highlight one significant cause of the literature's inconclusive findings—a myopic focus on per-pupil funding—and it proposes an alternative approach for researchers examining school finance reforms that will allow for greater clarity to emerge in a currently muddied field.

Nationwide Analyses

Despite years of litigation that has resulted in significant school finance reforms in many states, their actual effects on student achievement are largely in question (Ryan, 2010; Jackson, Johnson & Persico, 2015; Driver, 2018; Lafortune, Rothstein & Schanzenbach, 2018). Early scholarship in the field of school finance found that per-pupil spending had little to no effect on student achievement (Coleman, 1966; Hanushek, 1986, 1997; Burtless, 1996). These researchers purported to show that, after controlling for differences in the family backgrounds of students, differences in per-pupil spending had no significant effect on how students perform (Hanushek, 1986). Such analyses flew in the face of standard assumptions about schooling inputs, and they

faced their fair share of criticism (Card & Krueger, 1996; Heyns, 1997). This criticism was well-founded, seeing as competing analyses found that financial inputs did indeed have a positive effect on student performance (Card & Krueger, 1992, 1996). The absence of a consensus by the end of the millennium left the literature on school finance largely inconclusive; it remains an open question whether financial inputs have a significant effect on student performance, and if so, how much.

As time went on, litigation efforts in several states led to court mandated school finance reforms, and by the late 1990s and early 2000s, there was ample data from these reforms to rekindle the fire in the debate about whether money matters in education. The resulting analyses attempted to capture the effectiveness of this early wave of school finance reforms, reaching similarly inconclusive results to the earlier body of literature (Card & Payne, 2002; Hanushek & Lindseth, 2009; Hoxby, 2001). Generally these studies found that, as a result of school finance reforms, funding between districts within a state became more equal (Card & Payne, 2002; Hoxby, 2001). These results were not surprising, since much of the early school finance litigation that prompted these reforms was aimed at equalizing funding between schools (Ryan, 2010; Lafortune, Rothstein & Schanzenbach, 2018). But, as Hoxby (2001) notes, the reforms varied significantly between states. Though most states began with the same goal of equalizing school spending, they took quite disparate approaches. She points to a number of states that, in an effort to equalize their school funding schemes, engaged in a systematic “levelling-down” of funding, whereby schools received less overall funding, but the funding was more equally distributed. Other states took the opposite approach, adopting a “levelling-up” approach that lifted all boats, so to speak, to achieve the same result of equal funding distribution.

Partially as a response to the levelling-down of school funding in various states, and partially as a response to the disappointing results of equality reforms in school finance, litigants began advocating for adequate funding for all schools instead of equal funding between schools (Schragger, 2008). According to Schragger (2008, p. 17), "the shift toward adequacy reflects the realization that students in inner-city schools often cost more to educate than their counterparts in suburban schools." In addition, the move towards a demand for adequacy "also reflects a belief that reforms that depend on equalizing money across districts are more likely to fail politically and strategically" (*Ibid*). Given the nascent popularity of educational adequacy reforms, there is relatively little research examining their effectiveness. The research that does exist indicates that financial reforms based on an adequacy theory have a small but positive effect on student performance (Jackson, Johnson & Perisco, 2015; Lafortune, Rothstein & Schanzenbach, 2018). Interestingly, in their analysis of major finance reform events since 1990, Lafortune and colleagues (2018) found that adequacy-based reforms led to an overall improvement in student performance, but that the aggregate improvement was driven by low-income *districts*, and not, as one might expect, by low-income *students*. For example, a district with far fewer resources than its state's average district might see improvements on average test scores following school finance reform, but these improvements would likely be driven by improvements among wealthier students within the district, as opposed to poorer students. Jackson and colleagues (2015) take a longitudinal approach, including school finance reforms occurring between 1970 and 2010. They find that increases in per-pupil student spending within low-income school districts led to significant improvements in outcomes along various measures. Most notably, they find that an increase in per-pupil spending by about 10% for all school-age years within low-

income districts led to a 7.7% increase in wages per annum. This translates to a benefit-cost ratio of around three, implying that such investments into education are worthwhile economically.

Despite these promising results in recent scholarship, there is still little we can conclude about the efficacy of school finance reforms. Part of the issue is that states take massively different approaches to school finance reform, yet most of the existing research aggregates the results of these reforms despite their differences (see, e.g., Jackson, Johnson & Perisco, 2015; Lafortune, Rothstein & Schanzenbach, 2018). It will be helpful, then, to examine whether state-level research sheds any light on what makes school finance reforms successful.

Massachusetts

In order to further explore some of the gaps in the current literature on school finance reform, it will be helpful to look at the literature examining Massachusetts. Massachusetts has had a long history of education litigation in its courts, which has resulted in significant education reforms over the past several decades. Plaintiffs began challenging the constitutionality of the commonwealth's school funding scheme in 1978 with *Webby v. Dukakis* and continued in 1989 with *Levy v. Dukakis* (Nguyen-Hoang & Yinger, 2014). These cases prompted the Massachusetts legislature to enact significant reforms geared towards improving student achievement across the commonwealth (*Ibid*). These reforms did little to help those in Massachusetts' worst performing schools, so education reformers brought suit again in 1993, which resulted in the decision in *McDuffy v. Robertson*. This new judicial decision impelled the state legislature to pass the Massachusetts Education Reform Act (MERA) in June of 1993 (*Ibid*). The new legislation took old reforms one step further, and provided significantly more education funding, along with a

new state funding distribution scheme that would significantly benefit the commonwealth's poorest districts (*Ibid*).

It has now been 25 years since MERA was enacted, and there is a fairly significant body of literature examining its effects on school financing and student achievement. The results generally indicate that Massachusetts has seen improvements in student test scores following its landmark education reform, which included significant changes to Massachusetts' school finance mechanism (Downes, Zabel & Ansel, 2009; Guryan, 2001; Nguyen-Hoang & Yinger, 2014). Researchers have been able to replicate these test score improvements with relative frequency, making Massachusetts a particularly strong candidate for a case study.

As mentioned above, the Massachusetts legislature passed MERA primarily in response to the state supreme court's ruling in *McDuffy v. Robertson*, which required that the Massachusetts legislature and executive act to meet certain educational standards, though the commonwealth was also motivated by the deleterious effects of an earlier fiscal crisis and national concerns about school quality (Chester, 2014; Nguyen-Hoang & Yinger, 2014). Though funding distribution was a central piece of the act, it is important to realize that MERA did far more than reform Massachusetts' school finance mechanism; the act also instituted new educational standards, created a new statewide standardized test called the Massachusetts Comprehensive Assessment System (MCAS), introduced charter schools to the commonwealth, and adopted a new school accountability and assistance system (Chester, 2014). These reforms represented a significant departure from past policies and continue to influence the Massachusetts education system a quarter-century after their initial adoption (*Ibid*).

The new school finance mechanism that MERA incorporated required that the state contribute significantly more aid to local districts, which was awarded based on a guiding

foundation formula (Chester, 2014; Fahy, 2011). Under this new system, the state would calculate a foundation budget for every school district, which attempted to capture "the amount of money necessary to provide an adequate education to all students in that district" (Chester, 2014, p. 5). The foundation budget is based on district characteristics such as enrollment and student demographics, and districts are required to contribute towards this budget only to the extent that they can afford; the difference between the required local contribution and the foundation budget is made up through state aid (Chester, 2014; Fahy, 2011). Research indicates that these reforms have not always been implemented as originally intended, but that generally they help to create greater equity in school financing (Fahy, 2011; Fahy, 2012).

Given the stated intentions of the foundation formula, much of the research examining MERA attempts to determine whether the act led to increased educational spending across the state, a so-called "levelling-up" of spending (Hoxby, 2001), and whether it helped relatively poor districts to be able to spend similar amounts per-pupil to relatively wealthy districts. Both earlier and later research confirm that MERA has led to increased educational spending overall and has helped achieve greater spending parity between low- and middle-wealth districts (Dee & Levine, 2004; Downes, Zabel & Ansel, 2009; Guryan, 2001; Nguyen-Hoang & Yinger, 2014). Notably, the top quartile of districts, or those with the most wealth, maintained significantly higher levels of per-pupil expenditures post-reform compared to the bottom three quartiles, as might be expected with a policy that levels-up spending across the board (Downes, Zabel & Ansel, 2009). The additional funding came from newly introduced state aid, which was awarded to districts based on certain characteristics that the state used to evaluate fiscal need; importantly, MERA gave districts significant autonomy in how to spend these funds (Chester, 2014; Snow & Williamson, 2015). Subsequent research has shown that districts spent this state aid money

primarily on student instruction and capital expenditures, thus belying concerns that districts respond to increased state aid with decreased local contributions; still, this may be a feature specific to Massachusetts given that the state requires districts to meet the spending level defined by the foundation budget (Dee & Levine, 2004).

The scholarly response to these findings has been to assess whether increased funding across the state has led to increased student performance. Findings from numerous studies have shown that increases in per-pupil spending have indeed led to increases in student performance as measured by scores on standardized tests (Guryan, 2001; Downes, Zabel & Ansel, 2009; Nguyen-Hoang & Yinger, 2014). Still, similar to the national research asking the same question, the results are not entirely consistent. For example, while some researchers have found that the MERA school finance reforms have worked to close the achievement gap (see, e.g., Downes, Zabel & Ansel, 2009; Guryan, 2001), others have argued that the evidence is not so clear (see, e.g., Nguyen-Hoang & Yinger, 2014). Interestingly, the latter group of researchers found that the marginal benefit of increased funding was greater for wealthier districts than it was for poorer districts (Nguyen-Hoang & Yinger, 2014). Though this is not necessarily an indication that MERA's reforms are more beneficial to wealthier *students* as opposed to wealthier *districts* (demographic data suggest the two are not so correlated as one might expect (Lafortune, Rothstein & Schanzenbach, 2018)), it does present the question of why wealthier districts might be better able to utilize additional funding as compared to poorer districts.

Critique

Eric A. Hanushek, an acclaimed Stanford economist and prolific researcher on the economics of education, wrote in 1991 that "most school finance discussion … has focused

almost exclusively on variations in expenditures per student" (Hanushek, 1991, p. 424). This lamentation remains as true today as when it was first published nearly three decades ago in the Harvard Journal on Legislation. In reviewing the contemporary literature on school finance reform, I found a similar preoccupation with per-pupil expenditures and increases in school funding to the one Hanushek found in his own review. In this section, I endeavor to show how little has changed in the school finance literature since the early 1990s by identifying and evaluating the most cited school finance reform studies conducted after 1991. These studies serve as exemplars of my point, showing that researchers today still maintain a myopic focus on the effect that money has on student achievement. Each study has its own shortcomings that contribute to our current misunderstanding of school finance reform, and I detail these shortcomings in the following subsections.

Too Narrow a Focus

First and foremost, it will be important to establish and substantiate my claim that an exclusive focus on the impact of money in schools is myopic. Perhaps understandably, many believe it to be necessary that we know exactly the effect that our educational expenditures have on student achievement. Predominantly economists, these researchers are largely trying to answer the question that Leslie Papke (2005, p. 823) articulated in her work on Michigan's school finance reform: "If two schools are the same in all relevant aspects except per-student spending, what is the predicted difference in pass rates on a standardized exam?" Substitute "pass rates on a standardized exam" for any of the various measures of educational success and you have most of the literature on school finance reform. But to try and isolate the effects of school finance reform as such misses the forest for the trees. Studies striving towards this end may work to satisfy economists' desire to know exactly the marginal utility of our educational

investments, but it does little to tell us what goes into making an effective education system. This is because school funding schemes will never operate in isolation; rather, they operate as one part of an intricate web of interrelated policies, each with its own role in influencing student outcomes.

To give a simple example, imagine that a state has the best standardized test in the country, which tests nearly everything students graduating high school should know and be able to do. But these tests are incredibly expensive to administer properly, and only the wealthiest districts receive enough funding to do so. Teachers in poorer districts know that their students' results on the state tests will be influenced more by how it is administered than their ability to teach the necessary skills, so they teach differently from teachers in wealthier districts. The teachers' teaching strategies and the improper test administration combine to produce lower scores on the state tests (and perhaps worse long-term outcomes) for students in poorer districts. In this instance, the state would likely see improvements in student outcomes if it changed its school funding scheme to award more money to poorer districts, thus enabling them to properly administer the state's test.

Though this example is simplistic, it demonstrates one way in which changes to a state's funding scheme may interact with other policies to produce greater or lesser improvements in student outcomes. Taking a moment to consider the myriad other policies that could be influenced by financial reform—accountability, standards, testing, charter schools, administrative structuring, localized spending discretion, and special education, to name a few—it becomes clear that isolating the effects of financial reform is a wholly impractical undertaking. Indeed, though research on the subject is scarce, there is some evidence supporting the supposition that financial reforms interact meaningfully with other policies. For example,

Downes and Shah (2006) have found that the level of local discretion within a state helps to determine the effects of financial reforms on the level and growth of per-pupil spending. Another body of literature establishes that different school districts often have different costs of education, and that these costs can be influenced by state education policy (Reschovsky & Imazeki, 2001). Still, almost no research currently available attempts to identify how school finance reforms interact with other types of education policy.

What's critical is that, by ignoring non-financial educational inputs, school finance researchers miss the effects that these other policies can have on student achievement, in addition to the effects that they might have on the school finance reform itself. Education is not unidimensional; to understand what makes schools work well requires a holistic approach that takes more than just funding into account. Indeed, any number of impactful educational inputs could be influenced by changes to a school finance system. For example, researchers have long acknowledged that student achievement improves significantly with the presence of high quality after-school programs (Durlak, Weissberg & Pachan, 2010). It is common knowledge that smaller class sizes are associated with improved student outcomes (Glass & Smith, 1979). Research also indicates that the presence of high quality preschool programs can have long-lasting positive effects on students' school performance and life outcomes (Gilliam & Zigler, 2000; Gorey, 2001). Unsurprisingly, school discipline policies relating to suspension and expulsion also have significant impacts on student outcomes (Noltemeyer, Ward & Mcloughlin, 2015). Other bodies of literature point to the effectiveness of physical fitness as a catalyst for academic achievement, suggesting the importance of school-sponsored athletic activities (Fedewa & Ahn, 2013), and to the positive impacts that tutoring availability can have on students' academic performance (Cohen, Kulik & Kulik, 1982). Research in other areas is more

conflicted, but those areas still have bearing on student achievement. For example, some researchers have found that teacher salaries and qualifications have important implications for student outcomes (Darling-Hammond, 2000); others have found impacts resulting from the presence of religious and charter schools (Jeynes, 2012); high-stakes testing (Au, 2007); school and teacher accountability measures (Darling-Hammond, 2004); and curricular change (Au, 2007). Each of the above inputs has been shown to impact student outcomes in the classroom, and virtually all are contingent in some way on state policy and the amount of funding that schools receive.

Rather than isolate the effects of a single pecuniary reform, researchers should be attempting to discern the complex interactions that occur between various financial and non-financial reforms. Research taking such a multivariate approach will be expensive and time-consuming to conduct, a fact likely contributing to its relative absence in the current literature. But the knowledge we can glean from examining numerous educational inputs at once has the potential to be incredibly impactful. Economists and other researchers must begin to take a more holistic approach to education reform if we are going to learn anything about how education policy—and school finance policy in particular—affects student outcomes.

The Current Literature

National Analyses

In examining the impact of school finance reforms, some researchers have attempted nationwide analyses that aggregate data from all states that have passed such reforms. These projects typically begin by identifying every state in which some type of school finance reform has taken place during a designated period of time. Then, using this information, they attempt to take advantage of the natural experiment that such reforms create by comparing student

outcomes between those who attended school pre- and post-reform. Any change in test scores between the pre- and post-reform cohorts are supposedly due to the reform itself.

Of course, the above characterization of these studies simplifies their methodology quite significantly. But the details I have left out are largely unimportant; what is important is a common characteristic these studies all share: they all focus almost exclusively on the effect that educational spending has on student outcomes. Rather than explore the possibility that school finance reform operates more or less effectively alongside other types of reform, these researchers attempt to isolate the impact of changes to school finance mechanisms.

Looking first at a study conducted by Jackson, Johnson, and Perisco (2015), we find that the authors "were careful to control for several policies" that did not qualify as financial reforms (p. 205). In the context of Jackson and colleagues' project—discovering the effect of financial reforms on student outcomes—controlling for the effect of non-financial reforms is likely the correct strategy. But this strategy misses a broader truth that educational researchers have long acknowledged: that student outcomes are the product of myriad inputs working together in complex ways. Evaluating whether changes in school funding lead to changes in student performance tells us very little about what is actually happening within schools following reform.

We find a similar focus in other national studies of school finance reform. Much like Johnson and colleagues, Lafortune, Rothstein, and Schanzenbach (2018) attempt to "identify the causal effect of school finance reforms" (p. 6). To their credit, Lafortune and colleagues attempt to determine whether there exists an interaction effect between school finance reforms and accountability policy, finding no effect (Lafortune, Rothstein & Schanzenbach, 2018). Their discussion of potential interaction effects, however, is limited to a single footnote. They

arbitrarily dismiss the possibility that school finance reforms interact with non-accountability reforms, claiming that they "are not aware of a systematic classification of other aspects of state policy that might have been affected by [school finance reform]s" (*Ibid*, p. 23). Earlier studies, too, demonstrate a similar preoccupation with isolating the effects of school finance reforms. In their study of the subject, Card and Pain (2002) examine "the consequences of spending equalization for the relative test performance of students from different family backgrounds" (p. 49). Card and Pain's (2002) work has been called the "most useful national study of judicially induced state finance reform," yet it makes virtually no mention of non-financial reforms that may play a role in determining how effective spending equalization is (Baker & Welner, 2011, p. 2390).

Statewide Analyses

Another body of research evaluating school finance reforms looks at the effects of reforms within individual states. There exist far more studies in this category than in the category of research examining national trends, but still most fall prey to the same mistake of focusing too myopically on spending. Above, I gave a synopsis of the literature examining Massachusetts; I will start this section by evaluating those studies, later evaluating research on school finance reforms in other states.

The earliest study evaluating the effects of Massachusetts' financial reforms is Guryan's (2001). Much like the research at the national level, Guryan's (2001) paper attempts to analyze "the effects of educational expenditures on student achievement" (p. 4). Notably, Guryan makes no attempt in his analysis to position MERA's financial reforms among the Act's other non-financial reforms. His is strictly an evaluation of the impact that changes in spending had on student performance. Comparatively, Nguyen-Hoang and Yinger's (2014) later analysis does a

better job of incorporating effects from non-financial policies; still, their evaluation leaves much unanswered. Much like Guryan's (2001) earlier research, Nguyen-Hoang and Yinger (2014) attempt to discern the effect that changes in educational spending have on student performance. But these researchers take the additional step of evaluating differences in effect sizes between so-called "regular school districts," or districts that cover the same area as a single municipality, and "regional school districts," or districts comprised of more than one municipality. For purposes of education financing, these two district types function quite differently; and, as a result, the researchers find that changes in education financing have disparate effects on student performance depending on whether a district is regular or regional (Nguyen-Hoang & Yinger, 2014). Unfortunately, Nguyen-Hoang and Yinger (2014) limit their analysis of interaction effects to district types. But, by acknowledging that it is important for researchers to understand how various non-financial policies affect financial reform, they take a large step towards achieving a greater understanding of how money impacts student outcomes.

Another much researched case of school finance reform is Michigan's Proposal A, which massively revamped the state's school funding scheme in 1994. Unlike the Massachusetts Education Reform Act, Proposal A dealt exclusively with the state's school funding system, meaning that researchers studying the Michigan case are perhaps more susceptible to the error of focusing exclusively on the effect of money in schools. Indeed, most analyses of Proposal A do not meaningfully consider how it may interact with other policy areas. An influential study conducted by Papke (2005) attempts to determine the effects of the state's new spending levels on student performance. Much like her contemporaries, Papke's (2005) mission is to isolate the impact of money in education, according little regard to non-financial influences on student outcomes. Joydeep Roy (2011) conducted a similar study to Papke's, though with a broader

scope. Rather than simply look at the effects of money on test scores, Roy (2011) goes a step further, examining how changes in school financing have disparate effects depending on the presence of local spending autonomy. Roy (2011) finds that by eliminating local spending discretion, Proposal A negatively impacted previously high-spending districts while positively impacting previously low-spending districts. Still, despite this additional analysis that adds nuance to the conversation on finance reform, the focus of Roy's (2011) research is still almost entirely on the impact of money in education. Like Nguyen-Hoang and Yinger's (2014) analysis of Massachusetts' reforms, there is some movement in Roy's (2011) work towards identifying finance reforms' interaction with other reforms, but it is minimal.

Evaluating School Finance Reforms

If researchers are to better understand the impact of school finance reforms on student achievement, they will need to develop a more comprehensive picture of the myriad factors that contribute to a child's academic success. It is not enough to examine only whether increased per-pupil spending leads to increases in student test scores or other outcomes. Such methodology is common in the current literature on the subject, but it has several serious shortcomings that researchers have been too quick to overlook. Instead of focusing narrowly on the impact of money in education, researchers should be attempting to create a comprehensive model for how various education policies work together to produce our desired student outcomes. In the following subsections, I will lay out a path forward for future research.

Interaction Effects between Educational Reforms

If education researchers are to understand more about school finance reforms, they will need to look at education systems more holistically. The prevailing research objective—

discovering the impact of per-pupil spending—simply does not offer us any insight into how we might improve the effectiveness of schooling. Far more beneficial would be research into the impact of certain policy *combinations*, which are the true mechanism underlying any student outcomes that we observe. Despite modern efforts on the part of the federal government to create greater consistency across the country, education policy differs drastically between, and even within, states. A state's education policy landscape, which is comprised of policies ranging from standardized testing to charter schools to school finance, plays an important role in determining student outcomes. It likely plays a similar role in determining the impact of financial reforms.

Though there has been almost no research in the area, there is some evidence that suggests non-financial education policies impact the effectiveness of school finance reforms. As mentioned above, Nguyen-Hoang and Yinger (2014) find that school district structuring impacted the effectiveness of financial reforms in Massachusetts. Others find that the level of local spending discretion interacts meaningfully with financial reforms (Downes & Shah, 2006; Roy, 2011). Evidence also suggests that education policy can have a significant impact on the costs of education, which then determines the effectiveness of changes in school spending (Reschovsky & Imazeki, 2001).

The above findings indicate that school finance reforms interact meaningfully with other, non-financial areas of education policy. Yet, although the researchers named above deserve credit for expanding the focus of their studies beyond most of their contemporaries, most analyses are far from offering a comprehensive picture of how school finance reforms work within a wider education policy landscape. When state legislators pass a new school financing scheme, that scheme begins to interact in complex ways with the policies that the state already has in place. States that afford schools significant spending discretion will see disparate results

from states that are more heavy handed, even if both pass the same financial reforms. Districts with relatively high costs to education will see worse results with the same amount of money than districts with relatively low costs. A state with poor standardized tests may see improvements on those tests following school finance reforms, but its NAEP scores may remain stagnant. All this is to say that trying to isolate the effects of per-pupil spending in education will provide us with very little information about how school finance reforms truly affect a state's educational landscape. Instead, what researchers must do is determine what combination of education policies allows for our investments in education to have the greatest impact.

Test Scores: An Inadequate Measure of Success

Test scores have long been a subject of controversy in educational research. Particularly since the passage of the No Child Left Behind Act (NCLB) (2001), which mandated a significant amount of testing for students in nearly all grade levels, standardized tests have become a central part of our educational system (Hursh, 2007). It is understandable, then, that those looking to evaluate school finance reforms would turn to standardized test scores to assess whether such reforms improve student performance. In particular, researchers examining school finance reform are drawn to the National Assessment for Educational Progress (NAEP) as a proxy for student achievement (see, e.g., Hanushek, 2008; Lafortune, Rothstein & Schanzenbach, 2018). NAEP is alluring to researchers for a variety of reasons. First, the test has tracked students since 1969, using only slightly modified testing methods at each administration in order to allow researchers to identify long-term trends in performance (National Center for Education Statistics, 2019). Second, NAEP provides data for the entire United States that can be disaggregated down to the district level, which allows researchers to examine both inter- and intra-state trends in student performance over time (*Ibid*). Finally, NAEP has long been viewed by prominent

education scholars and practitioners as "a national indicator of progress toward [America's] educational goals" (Darling-Hammond, 1991, p. 224).

But despite its versatility and acclaim, NAEP is by no means a sufficient tool for measuring the success of education reforms. Of course, the most obvious shortcoming is that standardized tests, no matter how well designed, cannot capture everything that we hope our schools will provide their students. Indeed, in a 1999 report evaluating the quality and impact of NAEP, the National Research Council cautioned that NAEP is "an important but limited monitor of academic performance in U.S. schools," and maintained that it, like any standardized test "[cannot] adequately measure all aspects of student achievement" (National Research Council, 1999, p. 22). Looking specifically at NAEP, others have questioned whether it can be properly used to measure inter-state differences in educational quality, finding that most variation in student test scores between states could be explained by non-school demographic factors (Robinson & Brandon, 1994). NAEP is also limited in the extent to which its data can be disaggregated; because of the way the test takes samples of students, it can only describe trends down to the district level, thus preventing researchers from examining differences between individual schools (see, e.g., Lafortune, Rothstein & Schanzenbach, 2018).

Still, NAEP's shortcomings are no reason to discard its use completely; as the gold standard of educational assessment, it remains an incredibly important resource for educational researchers and policymakers across the country. But the limitations that accompany NAEP should give pause to any researchers looking to use it as a proxy for student achievement, particularly when measuring the effectiveness of school finance reforms. No matter how thoughtful and well-designed a standardized test is, it will still be incapable of fully capturing all that education is meant to provide our students. Acknowledging this dilemma, some researchers

have opted instead to look at long-run indicators of achievement such as rates of college attendance (Hyman, 2017) or adult income, educational attainment, and poverty incidence (Jackson, Johnson & Perisco, 2015). These additional metrics offer a partial solution to the myopic focus on test scores present in much of the literature; they offer insights into what Labaree (1997) calls the social efficiency and social mobility goals for education. But still, these data require years to gather, making them impossible to use as a barometer to evaluate the success of contemporary reforms.

What are needed instead are improvements in state standardized tests. States and researchers cannot continue to rely on NAEP as their primary source of achievement data. The characteristics noted above—NAEP's inadequacy for inter-state comparisons and its limited disaggregation—make it a blunt tool for evaluating reforms within and among states. Though it is a helpful indicator of general trends in educational performance, it cannot and should not be used for determining the success of specific reforms such as increases in school funding. Instead, states should invest in the development of their own high quality standardized tests—tests that approximate NAEP—that researchers can use to more effectively isolate the effects of education reforms. States made a move in this direction by adopting, at least initially, the high quality tests developed by the Common Core consortia. But of the 44 states that once used these tests, only 16 still do (Slover & Muldoon, 2018). This backtracking exemplifies states' reluctance to make changes that may highlight their educational shortcomings. But by resisting such changes, states make it more difficult to accurately measure student performance and to discover which policies help to improve it. Though no standardized test can fully capture all that we hope for students to achieve, a high quality test can offer important insights without compromising student learning.

Non-School Influences on Student Performance

Another important consideration for researchers and policymakers should be the significant impact that non-school factors have on student educational outcomes. Historically, when reformers and policymakers have wanted to improve educational outcomes they have looked to educational reforms, the presumption being that if you want to improve students' performance in schools, you need to improve the schools. But this focus may miss other reform areas that can also have a powerful impact on student outcomes. A significant body of research exists showing that much of how students perform in school is determined by out-of-school factors, such as socioeconomic status, parental presence, mobility, and access to healthcare (Rothstein, 2004). Though schools certainly play an important role in determining students' educational success, there are myriad non-school factors that contribute as well. This evidence suggests a comparative approach for researchers interested in learning more about the relative effectiveness of school finance reforms in improving student performance.

Given what we know about the impact of non-school factors on student performance, we can infer that in some instances, these influences may represent more worthwhile investments than school finance reforms. It may be the case that contemporary increases in educational expenditures would have been more impactful had they been spent on social programs for parents and children. Research has shown that certain prenatal, neonatal, and early childhood interventions can lead to significant improvements in outcomes for recipient children (Olds, 2006). Other research indicates that something as simple as providing children with access to an optometrist can have a significant impact on their performance in school (Gould & Gould, 2003). Some scholars have already explored what it might cost to provide social support to children from the time they are born to when they turn 18, offering a comprehensive list of programming that can help to mitigate some of the negative effects that out-of-school factors often have for

children in poverty (Rothstein, Wilder & Allgood, 2011). The recommended programs include a nurse-family partnership for pregnant women and recent mothers, supplements for parental education, home literacy coaches, early childhood care and education, routine and preventive healthcare for children, and high quality after-school and summer programs (*Ibid*). Though it may not be reasonable to demand that every state implement such comprehensive programming, any one of these programs would be impactful if adopted.

As researchers look to further analyze and understand school finance reforms and their impact on student outcomes, they should help policymakers understand the opportunity cost that comes with increases to school funding. School finance reforms in many states have seen lackluster results despite significant increases in per-pupil funding. I argue above that this, in part, stems from our general lack of understanding about what makes school finance reforms successful. But these poor results may also be rooted in something more systemic. It may be the case that no amount of school funding can effectively overcome the barriers to education created by poverty and other out-of-school factors. If this is true, researchers will need to help determine where our dollars are best spent by comparing the results of school finance reforms to the results of social programming.

Conclusion

As reformers look forward to determine where the next steps lie, it is important that they ensure their efforts are working towards meaningful change. Education litigators, in their quest for financial equality and adequacy, have oftentimes forgotten that there is more to educational improvement than funding. And policymakers, for their part, have generally placed too much faith in the power of funding changes to solve complex educational problems. Though the goals

of these groups are commendable, their efforts have often resulted in little real improvement in student outcomes. Countless dollars have been spent on moving the country towards a more equitable and adequate school finance mechanism, and yet in most states, the same disparities between wealthy and poor, white and non-white students persist.

It would be unfair, however, to place the blame entirely on policymakers and reformers, who have been guided in their decisions by a research literature that is itself misguided. This capstone, in recognition of the shortcomings present in the literature, has attempted to add greater nuance to the conversation on school finance reform. It has drawn attention to the holes that currently exist in the research on school finance reform, where researchers have focused too narrowly on the impact that money has on student performance. Such a narrow focus gives relatively little useful information about how to improve our education system, as it misses the complex interactions that occur between school funding and other areas of education policy. In order to better understand how to improve student outcomes, it will be necessary for future research to take a more holistic approach, attempting to discover the various ways that education policies work in tandem to achieve our desired outcomes.

It is ultimately the literature that informs the decisions of education policymakers, and as such it is necessary that researchers take full account of all factors influencing educational success. This capstone has offered several suggestions for researchers looking to add to the insight of their studies. The most important of these suggestions is to examine the interactions between school finance mechanisms and other types of education policy. But also important is the fact that researchers must understand the inherent limitations of test scores in telling us about student performance, and that the most impactful policies in education may not be education

policies at all. For if we are going to strive to improve the station of our country's least fortunate, we had better do so responsibly, without assuming that more money is the answer.

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