Fiscal Federalism and K-12 Education Funding: Policy Lessons from Two Educational Crises

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Abstract

We synthesize and critique federal fiscal policy during the Great Recession and Covid-19 pandemic. First, the amount of aid during both crises was inadequate to meet policy goals. Second, the mechanisms used to distribute funds was disconnected from policy goals and provided different levels of aid to districts with equivalent levels of economic disadvantage. Third, data tools are missing making it difficult to understand whether funds were used to meet policy goals. Details for these results are provided along with policy recommendations.

Key Words

Federal fiscal stimulus, inequality, Great Recession, Covid-19 Pandemic

Introduction

In the wake of the Great Recession and Covid-19, the federal government has distributed nearly a quarter of a trillion dollars in fiscal support to states and school districts to offset disruptions to district resources and student learning. Surprisingly, very little empirical research has assessed the impacts of these funds to determine whether they accomplished their purported goals. Given the magnitude of federal fiscal stimulus, we present policy lessons from these federal efforts aimed at supporting education spending and mitigating losses to student achievement. We assess three dimensions related to the efficacy of federal fiscal stimulus: (i) were federal funds sufficient to meet policy goals? (ii) were federal funds allocated to students and school districts with the greatest need? and (iii) were federal funds used to accomplish their purported policy goals? In the context of these three dimensions (i.e., magnitude, distribution and use), we examine federal fiscal stimulus under the American Recovery and Reinvestment Act (ARRA) and Covid-19 Elementary and Secondary Schooling Emergency Relief (ESSER) funds, which were made available via Coronavirus Aid, Relief, and Economic Security (CARES) Act, Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act, and the American Rescue Plan (ARP).

In short, ARRA funds were sufficient to replace fiscal losses to state spending in the first two years of the Great Recession, but were vastly inadequate to fully offset district spending declines for the duration of the Great Recession. Similarly, plausible estimates of the fiscal cost necessary to recover student learning loss during the Covid-19 pandemic dwarf ESSER funds. Further, by relying on pre-existing funding schemes—state funding formula rules in the case of ARRA and Title I allocation rules in the case of ESSER—both ARRA and ESSER allocated funds incommensurate with policy goals. One notable consequence is that districts with identical levels of student poverty received very different amounts of federal aid even after adjusting for comparable wage differences. Finally, with respect to the use of federal aid, past and current accounting systems limit the efforts of policymakers and researchers to determine whether the uses of federal funds effectively matched the purported goals of fiscal stimulus.

From a policy perspective, increasing the amount of federal aid might be difficult politically, but publicizing the costs needed to remediate losses (either of revenues in the case of the Great Recession or learning in the case of the Covid-19 pandemic) might help. Moreover, while we do not suggest that federal aid be earmarked for specific uses (i.e., such as with categorical aid), the lack of consistent and complete data collection constrains accountability efforts and may reduce political support for federal assistance. Requiring districts to record how revenues were spent and publicizing those data by, for example, reporting to the National Center for Education Statistics (NCES) fiscal file, would significantly improve accountability efforts around federal fiscal stimulus during future educational crises. At a minimum, the federal government could sample representative districts as a system monitoring tool. Lastly, we recommend that future federal efforts to provide aid to localities in times of crisis should be less reliant on distributional mechanisms of convenience, such as state funding formulae or Title I allocations, and instead be more tightly connected to policy goals.

Background on Federal Fiscal Stimulus during the Great Recession and Covid-19

The Great Recession inflicted significant long-term damage to the US economy and to P-12 revenues specifically, driven primarily through declines in state revenue (Leachman et al., 2017). By some estimates, school spending declined by seven percent nationally (Jackson et al., 2020), equivalent to $945 per pupil per year for six years (Anglum, Shores, and Steinberg, 2022), with nearly 300,000 school employees laid off (Evans et al., 2019). These losses in resources caused student achievement to decline, especially in areas with the largest employment losses and among districts serving predominantly economically disadvantaged and minority students (Shores & Steinberg, 2019; Jackson et al., 2019).

To combat declines in state revenue, ARRA distributed nearly $50 billion to state education systems in an effort to restore state funding to the greater of 2007-08 or 2008-09 funding levels.[1] To ensure that federal aid replaced declines in state revenues, Title XIV guidelines stipulated that the State Fiscal Stabilization Fund (SFSF), ARRA's largest P-12 funding mechanism, was to restore state support for education through the "state's primary elementary and secondary funding formulae," and if ARRA was insufficient to support full recovery of state aid, then "the Governor shall allocate those funds … in proportion to the relative shortfall in State support," (H.R. 1—166). The Covid-19 pandemic also inflicted significant long-term damage to the US economy, but, contrary to expectations, P-12 revenues have been largely unaffected. Initial projections by the Congressional Budget Office estimated $650 billion in total revenue shortfalls during fiscal years 2020 to 2022 (Leachman, 2020); ultimately however, P-12 revenues shortfalls were much less severe,

[1] American Recovery and Reinvestment Act of 2009; Public Law 111-5 (H.R. 1), February 17, 2009: https://www2.ed.gov/policy/gen/leg/recovery/statutory/stabilization-fund.pdf.

totaling only $22 billion (Leachman and McNichol, 2020).[2] Nevertheless, the federal government provided an unprecedented amount of aid to districts and states via ESSER, which was implemented in three separate federal relief efforts, i.e., CARES, CRRSA, and the ARP. In total, these acts have provided $189.8 billion towards elementary and secondary school education.

In addition to the difference in the magnitude of federal fiscal stimulus, Covid-19 relief is distinct from ARRA in two ways. First, whereas ARRA disbursed aid via the states and state revenue contributions specifically, ESSER was disbursed via Title I, Part A shares.[3] Second, whereas ARRA was intended to offset losses in state revenues, Covid-19 relief had two functions: (i) to expand upon ESEA Title I functionality and (ii) to offset learning loss by providing compensatory learning opportunities to students whose education was disrupted because of the pandemic.[4]

Were Federal Funds Sufficient to Meet Policy Goals?

Though ARRA and ESSER provided unprecedented amounts of federal aid to states and localities, these amounts were likely insufficient to accomplish their policy goals. We provide details below, but to summarize: lost revenues from the Great Recession totaled $223 billion whereas ARRA aid (via the SFSF) was only $50 billion. Estimated costs to offset learning loss accrued during the Covid-19 pandemic vary widely, but plausible estimates exceed $500 billion dollars whereas ESSER funds totaled only $189 billion.

Recent estimates indicate that district spending declined following the onset of the Great Recession by $945 per pupil per year from 2008-09 to 2013-14, with greater losses accruing in years 2010-11 to 2013-14 of about $1,000 to $1,600 per pupil per year (Anglum, Shores, and Steinberg; 2022; Shores and Steinberg, 2019). In contrast, for years 2008-09 to 2013-14 ARRA

[2] Retrieved https://www.cbpp.org/research/state-budget-and-tax/pandemics-impact-on-state-revenues-less-than-earlier-expected-but

[3] For CRRSA, see Title III Section 313 (b). Public Law No. 116–260. Consolidated Appropriations Act. 2021. https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf. For ARP, see Public Law No. 117-2. American Rescue Plan Act. 2021. https://www.congress.gov/117/plaws/publ2/PLAW-117publ2.pdf. Part 1, Section 2001 part (c) and (d) stipulate that grant funding to states shall be allocated "in the same proportion as each state received under pat A of title I" of the ESEA Act of 1965 and grants to local educational agencies (LEAs) "in proportion to the amount of funds such local educational agencies received under part of title I" of the ESEA Act of 1965.

[4] CARES, for example, stipulates funds should be used to "provide emergency support through grants to local educational agencies that the State educational agency deems have been most significantly impacted by coronavirus to support the ability of such local educational agencies to continue to provide educational services to their students," (Sec. 18002 (a)). CRRSA, for example, required $17.2 billion for "carrying out Title I and subpart 2 of Part B of Title II of the Elementary and Secondary Education Act of 1965," (Section 313 (b)). And ARP, for example, included multiple stipulations requiring funds to be used to offset learning loss and provide supplemental learning opportunities (Sec. 2001 (e)).

aid amounted to $219 per pupil per year, with most of those funds spent in the years 2009-10 and 2010-11, when educational expenditure losses had not yet peaked. Figure 1 shows how real expenditures declined beginning in 2008-09 relative to pre-recession trends. Figure 1 also shows that ARRA funds (represented in red) offset only part of that loss in the initial years before dissipating in later years. Taken together, ARRA provided $50 billion in aid from 2008-09 to 2013-14, whereas districts sustained cumulative losses of $223 billion during that same period.

[Insert Figure 1 Here]

A key policy goal for ESSER funds was to offset learning losses that accrued during the Covid-19 pandemic and from the switch to remote instruction in particular. To estimate the amount of federal aid necessary to offset learning loss we need three estimates: (i) the average amount of learning loss resulting from switching from in-person to remote instruction; (ii) the average number of student-weeks spent in remote instruction; and (iii) the marginal cost of increasing student achievement (in comparable units). To calculate the total amount of learning loss, we obtain estimates of lost learning and extrapolate those estimates to the average number of student-weeks spent in remote obstruction; we obtain estimates of lost learning and student-weeks of remote instruction from multiple sources, described below. We then draw on estimates of the marginal cost of increasing student achievement from Jackson and Mackevicius (2021) who meta-analyzed causal impacts of school spending on student achievement.

Estimates of learning loss vary widely. At the high end, an impact evaluation from the Netherlands, which isolates variation in achievement from the switch to remote instruction alone (i.e., by holding constant other pandemic-related disruptions to learning) shows losses of 0.48 SD for low-income students and 0.35 SD for non-low-income students (Engzell, et al., 2021).[5] At the low end, Kuhfeld and colleagues provides estimates of lost learning ranging from 0.25 SD for non-low-income students to 0.3 SD for low-income students.[6] Intermediate estimates from Goldhaber and colleagues (2022), who use the same data as Kuhfeld but attempt to isolate changes in student

[5] These estimates are based on reported effect sizes of a composite score (i.e., math, spelling, and reading) for 8 weeks of remote instruction extrapolated to 36 weeks. Parental income is based on parental educational attainment levels and so is not exactly commensurate with US equivalent parental income. Estimates from this study do not vary by subject.

[6] This average is the estimated learning loss in math (0.26), which is then converted to low-income and non-low-income estimates based on a factor of 1.2 for low-income students and weighted by 0.2 for low-income and 0.8 for non-low-income students, respectively.

achievement due to remote instruction alone, find achievement declines ranging from 0.244 for non-low-income students and 0.359 for low-income students.[7,8]

The true impact of Covid-19 on population learning loss depends on certain assumptions. The Kuhfeld and Goldhaber estimates may be too small, due to sample attrition concentrated among low-income test takers and endogenous responses from schools, as these estimates include some spent ESSER funds plus adjustments among educational personnel to combat highly publicized learning losses. The Engzell estimates may be too large, since they reflect the initial shock to learning during the first eight weeks of the pandemic, which may have abated as educators became more adept at remote instruction, but they may also be too small, since access to broadband and the welfare system generally is more equitable in the Netherlands compared to the U.S. Below, we provide multiple estimates of learning loss.

Estimates of the average number of student-weeks spent in remote instruction also vary widely. We draw on two sources. Our first source is from Parolin and Lee (2021) and is based on aggregated, anonymized mobile phone data released each month through SafeGraph.[9] These data are useful because they provide estimates of time spent in remote instruction from the start of the Covid-19 pandemic to the present. Further, these data do not rely on self-reporting from education agencies and may be less subject to selection bias. Our second source is from the American Enterprise Institute's *Return to Learn Tracker* (R2L) which relies on school district websites' published content, with data obtained via web-scraping and analyzed using both machine learning and traditional techniques.[10] These data are useful because they are based on education agency reports, rather than being inferred from mobile phone data. These data are not available prior to September 2020 when rates of remote instruction were greatest.

Figure 2 shows the average percentage of students in remote instruction over time by month. The results based on Paroline and Lee (PL) are shown in blue; the mean percentage is

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[7] Our estimate of 0.244 for non-low-income students is the unweighted average in math of low-poverty (0.201) and middle-poverty (0.287) districts for 36 weeks of remote instruction. Our estimate of 0.359 for low-income students is in math for 36 weeks of remote instruction.

[8] Agostinelli and colleagues (2022) identify effects of 0.4 SD for low-income students and no lost learning for non-low-income students based on structural assumptions that non-low-income parents can substitute parental instruction for school instruction. Notably, results from Goldhaber and colleagues (2022) show that remote instruction drives learning loss and not income, thereby ruling out the assumption made by Agostinelli.

[9] These data can be publicly obtained here https://osf.io/tpwqf/.

[10] The methodology for these data can be found here: https://www.returntolearntracker.net/about/. An aggregated data file was generously provided to us by Nat Malkus at AEI.

depicted by the horizontal blue line.[11] Results from the *Return to Learn Tracker* are shown in red for poor students and green for non-poor students; horizontal lines indicate the mean percentages from September 2020. Notably, the PL data show that remote instruction rates were greatest in April and May 2020, with about 90 percent of all students receiving remote instruction. Beginning in September 2020 (i.e., Fall of the 2020-21 academic year), the PL and R2L data are very similar, showing about 40 percent of all students receiving remote instruction. The R2L data are disaggregated by income and show that schools with more low-income students were more likely to receive remote instruction, a result not demonstrated in the PL data.[12] The key difference between the two data sources is that R2L depict a sharp decline in remote instruction rates beginning in December 2020; by May of 2021 less than 10 percent of students received remote instruction according to the R2L data. In contrast, the PL data show a much less steep decline, with about 30 percent of students receiving remote instruction in May 2021. It is not feasible for us to adjudicate these differences, though we note that the National Center for Education Statistics (NCES) *Back-to-School Fast Fact* reports that, in May 2021, 26 percent of 4th and 8th grade students were enrolled in remote instruction.

[Insert Figure 2 Here]

We generate three estimates of the number of student-weeks spent in remote instruction. From PL, we obtain two estimates: 41 percent of students, on average, spent 36 weeks (i.e., the 2020-21 school year) in remote instruction; and 43 percent of students, on average, spent 52 weeks (i.e., the Spring of the 2019-2020 school year and the 2020-2021 school year) in remote instruction. From R2L, we obtain an estimate of 20 percent for 36 weeks, which is based on the weighted average of 30 and 18 percent of poor and non-poor students, respectively.

Lastly, we obtain estimates of the cost needed to remediate learning from Jackson and Mackevicius (2021), who meta-analyzed the now extensive causal literature relating educational spending to student achievement gains. The authors find that an additional $1,000 of *annual* per pupil spending yields 0.012 SD of achievement growth for low-income students and 0.007 SD for non-low-income students.[13] One way to conceptualize this is as follows: average per pupil

[11] These estimates replicate the published data but extend the time series through May 2021, as updated data are provided in the data repository but were not published in the original manuscript.
[12] The R2L data closely resemble data assembled by Oster and colleagues (2021), which is not surprising, since Oster, et al. also rely on district self-reports, though their sample of data is smaller than the R2L data.
[13] Reported estimates from Jackson and Mackevicius are based on four years of investment. We convert the four-year estimate to annual dollars by simply dividing both cost and effect sizes by four.

expenditures in the U.S. is about $13,000 per pupil. On average, in a year, student achievement increases by about 0.6 SD (Bloom, et al., 2006). Over the course of the year, then, those $13,000 of educational expenditures can be thought to yield approximately 0.15 SD of achievement growth based on the Jackson and Mackevicius result, with the remaining 0.45 coming from family and other non-school inputs. This is based on a widely reported (and replicated) finding that about 75 percent of achievement growth is due to non-school inputs (e.g., Coleman, 1968; Reardon, et al., 2019), which is commensurate with the meta-analytic result.

Recently, two other approaches for estimating the cost necessary to remediate lost learning have been proposed. Here we compare those approaches to our own. The first approach, suggested by Gordon and Reber (2022), calculates the cost from an a la carte menu of interventions that schools can purchase, such as tutoring. Our concern with this approach is that expanding the relatively small-scale interventions such as tutoring to the approximately 20 million students that experienced remote instruction will be difficult, especially given current tightness in the labor market and thus the difficulty in maintaining a fixed level of teacher/tutor quality when targeted interventions are taken to scale. We suspect either that costs will ultimately exceed the expected cost of implementing such programs at scale or their anticipated effects will be lower. Minimally, no such study has evaluated impacts of tutoring at scale so there is uncertainty about costs and effect sizes.

The second approach, suggested by Goldhaber and colleagues (2022), calculates the cost as a function of replacing a school's annual budget. For example, if learning loss is 0.2 SD and expected learning growth in the absence of Covid-19 is 0.6 SD, then federal aid would need to cover one-third of a district’s annual budget. We have two concerns with this approach. First, differences in spending among school districts and especially across states are very large, even adjusting for comparative wages (Shores, et al., 2022), and there is some reason to think those differences in expenditures translate to differences in student academic performance. Thus, replacing a school district's budget in a low-spending state will not be expected to result in the same magnitude of recovered learning as replacing a district's budget in a high-spending state. At the same time, it is also unlikely that a school district’s budget contributes to 100 percent of average student learning in a year for reasons discussed above. Thus, the true cost to increasing achievement a full academic year (i.e., about 0.6 SD) is likely much greater than the average annual per pupil expenditure captured by school district budgets.

For these reasons, we think using estimates based on plausibly exogenous variation from school spending shocks that have occurred in many different educational contexts is the most appropriate way to conceptualize how much spending is necessary to remediate lost learning at scale, as this approach is largely immune to these two criticisms. First, the school finance literature summarized by Jackson and Mackevicius represent interventions at scale—often school finance reforms or school funding formula changes that vary across many states over a long period of time. Second, leveraging exogenous variation in spending to summarize how much spending is needed to increase achievement represents a more defensible internally valid estimate of how much money is needed to increase achievement, as it explicitly relates changes in spending (and, *arguendo*, nothing else) to changes in achievement, as opposed to district budgets which do not necessarily represent the true cost of increasing achievement by the expected annual change.

Wrapping up, we can now provide cost estimates to remediate learning losses that occurred during the Covid-19 pandemic. These estimates are depicted in Figure 3. Our lowest estimated cost is $325 billion and assumes that 20 percent of students experienced, on average, 32 weeks of remote instruction causing achievement to decline by 0.25 and 0.3 SD for low- and non-low-income students, respectively. Using these same effect sizes, plausible estimates based on 43 percent of students experiencing 52 weeks of remote instruction (i.e., inclusive of the Spring 2020 year when nearly all students experienced remote learning environments) incur costs of $930 billion.

[Insert Figure 3 Here]

Whatever cost estimate is made will require explicit assumptions about the expected effect of school spending, the impact of remote instruction on achievement, and the percentage of students subject to remote instruction over time. We have tried to state our assumptions clearly and contrast those with other approaches. It may be that effect sizes taken from exogenously induced spending changes will not generalize to learning loss that transpired over a relatively narrow timespan. For instance, districts may use ESSER funds more efficiently than funds exogenously introduced via a school finance reform. Indeed, Jackson and colleagues (2021) conclude that districts appear to be more efficient with resources during recessionary periods, as the negative fiscal shock from the Great Recession reduced achievement less in an absolute sense relative to equivalent positive fiscal shocks. Of course, districts may also use ESSER funds less efficiently if, for example, they cannot hire supplemental staff due to labor market constraints or do not recognize the severity of lost learning that occurred during the pandemic. This last point may in fact be the case, as FutureEd has reported educational agencies plan on spending just 27 percent of ESSER funds (approximately $51 billion) on academic remediation, which would be far less than even the most conservative estimates of the cost of fully remediating student learning losses.

Were Federal Funds Allocated to those Students and Districts with the Greatest Need?

Both ARRA and ESSER relied on pre-existing distributional channels to allocate federal funds. Consequently, these funds were not (or have not been, in the case of ESSER) allocated to students in accordance with policy goals and, importantly, provided different levels of federal support to equivalently economically disadvantaged school districts, due to either between state differences in state support for economic disadvantage in the case of ARRA or between state differences in Title I funding amounts in the case of ESSER.

First, despite the intent of ARRA to offset losses in district revenues, in practice ARRA aid was not allocated to districts that experienced greater spending declines. Indeed, on average across the U.S. and in individual states, district-level expenditure losses were mostly uncorrelated with ARRA aid (Shores and Steinberg, 2019; Anglum, Shores, and Steinberg, 2022). Further, because of differences in the progressivity of state funding formulae, districts with similar levels of economic disadvantage (poverty or free or reduced-price lunch shares) received very different levels of ARRA aid, even after adjusting for differences in comparable wages across districts. Similarly, Title I provides different base amounts to states based on factors such as average state spending per pupil and the equity of state expenditure distributions (Snyder, et al., 2019), while districts receive similar amounts proportional to what the state was allotted. Thus, districts with similar levels of poverty will receive different amounts of Title I aid because Title I is distributed unevenly across states, a feature of Title I that has received criticism recently (see e.g., Gordon and Reber, 2021). These consequences of both ARRA aid and Title I are presented in Table 1, which shows variation in predicted ARRA spending and Title I revenues for different subsets of districts in the US.

[Insert Table 1 Here]

Reading across, Table 1 shows average ARRA Expenditures for years 2008-09—2013-14 and average Title I revenues for 2018-19, the most recent year public data are available for all districts in the U.S.; dollar amounts are adjusted by the comparable wage index (CWI) to control for cost differences associated with the expected wage of the non-teaching college-educated workers. For ARRA and Title I, we focus on districts in the bottom and top deciles (in percentages) of economic disadvantage and Black and Hispanic enrollment, and state means (the weighted average of ARRA and Title I per state). Reading down, we show variation in ARRA and Title I by including expenditures/revenues at the 10th, 25th, 50th, 75th, and 90th percentiles.

As expected, districts with more economically disadvantaged students received more funds from ARRA and more Title I. The median allocation of ARRA to the poorest districts was $331 per pupil compared to $127 for the least poor districts. Similarly, the median allocation of Title I to the poorest districts was $732 per pupil compared to $50 for the least poor districts. In contrast, neither ARRA nor Title I provide meaningfully more aid to districts with more Black and Hispanic students. Results from Table 1 also show how variable ARRA and Title I aid are even for districts with similar demographic compositions. For districts with the greatest poverty, ARRA aid ranged from $204 to $558 per pupil; for Title I, the comparable range is $474 to $1,153. For both ARRA and Title I, aid ranges are similar for districts with similar percentages of Black and Hispanic enrollment. Lastly, we see that much of this variation is due to between state differences: average state-level ARRA aid ranges from $149 to $318, and average Title I aid ranges from $195 to $433. As stated, all dollar estimates are adjusted for comparable wages.

Advocates may take solace knowing that federal fiscal relief benefited economically disadvantaged students more, on average. However, there are notable limitations to this allocation mechanism. First, for both the Great Recession and Covid-19, economically disadvantaged students were not exclusively affected by the respective crises. Indeed, during the Great Recession, there was almost no relationship between district expenditure losses and economic disadvantage (Anglum, et al., 2022; Shores and Steinberg, 2019), and though economically disadvantage students experienced greater remote instruction than non-economically disadvantaged during the Covid-19 pandemic (30 percent versus 18 percent, respectively), it is the remote instruction *per se* that explains most of the variation in lowered achievement, meaning that aid could have more effectively targeted remote instruction explicitly (Goldhaber, et al., 2022). Lastly, both state funding formulae (which routed ARRA aid) and Title I neglect race and ethnicity, despite the now overwhelming evidence that minoritized student populations face obstacles to learning independent of their economic status. Indeed, during the Covid-19 pandemic in particular, rates of remote learning for Black and Hispanic students exceeded White students by 10-15 percentage points (Oster, et al., 2021; Parolin and Lee, 2021).

Though using pre-existing distribution channels may have been an expedient mechanism for the federal allocation of aid, it was poorly targeted; further, it was and is feasible to update the distributional mechanism as new information about losses (revenues and learning) came to light. In the case of the Great Recession, for instance, ARRA was first made available in advance of the largest expenditure losses (Anglum, et al., 2022), meaning that portions of ARRA could have been distributed based on expedience or predictions and then revised once it was known that revenues rebounded more quickly for some districts than others (e.g., because property tax rates could be adjusted in response to the crisis; see e.g., Chakrabarti and Roy, 2014; Dye and Reschovsky, 2008). For Covid-19, there was evidence early in the pandemic that remote instruction was detrimental to student learning and broadly distributed over much of the population.[14] Others have pointed out that non-economically disadvantaged districts are likely to have the most difficulty implementing remediation plans due to ESSER's Title I disbursement (Goldhaber, et al., 2022; Gordon and Reber, 2021). Thus, adapting ESSER allocations to remote learning would have been a feasible adjustment the federal government could have made in real time.

Were Federal Funds used to Accomplish Their Policy Goals?

We have the least amount of information available to assess this final dimension, a consequence of the limited data collection and accountability systems implemented during the Great Recession and Covid-19. This absence of reporting and accountability is a policy failure we wish to draw attention to. For ARRA, the only national database which documents federal aid is the NCES F-33 fiscal file, which recorded ARRA expenditures in two categories: capital outlays and instructional expenditures. Questions related to how ARRA expenditures were used, or which personnel and grade levels were prioritized, are not answerable given the existing data.

This dearth of data is consequential from an accountability standpoint as well as a scientific one. Regarding accountability, perhaps there is less worry here than one might think since districts were facing significant budget shortfalls and ARRA funds provided only short-term relief, allowing districts to maintain personnel for only a short while. Thus, it seems likely that ARRA funds were used as a stopgap measure to forestall the layoffs to come. From a scientific standpoint,

[14] See, for example, Matt Barnum's work in March and June of 2020. https://www.chalkbeat.org/2020/6/26/21304405/surveys-remote-learning-coronavirus-success-failure-teachers-parents and https://www.chalkbeat.org/2020/3/24/21196123/the-coronavirus-double-whammy-school-closures-economic-downturn-could-derail-student-learning-resear

however, the absence of rigorous data collection has reduced opportunities for learning.[15] For example, district layoff policies based on recency (such "last-in first-out" or LIFO policies) are thought to be inequitable (Kraft and Bleiberg, 2021), though analysis of how ARRA contributed to or mitigated such impacts is unavailable. To put it more succinctly, there is not a single study that has estimated the causal effect of ARRA expenditures on student learning, despite ample evidence that expenditure losses were consequential (e.g., Jackson, et al., 2019; Shores and Steinberg, 2019).

For ESSER, there is still time to build in data collection systems that allow for monitoring and evidence-based learning. Calls for accountability are already emerging as anecdotes about expenditure decisions by school districts appear disconnected from remediation efforts.[16] Different accountability systems are available, and if requiring all schools to disaggregate expenditures from ESSER directly is too onerous, a system monitoring approach (e.g., data collection based on samples of schools) is likely to be more feasible (e.g., Fahle, et al., 2019). For instance, just as with the National Assessment for Educational Progress (NAEP), the federal government could randomly sample districts and require them to document expenditure allocations with a level of detail necessary for accountability; providing districts with notification and a short window in which to prepare would give them time to generate the necessary reports. Currently, schools are faced with the difficult task of expediting learning opportunities for segments of the student population. What effects these efforts will have and determining which interventions are most effective are especially urgent now, but any rigorous evidence that emerges from these efforts will be useful in other contexts as well, such as in cases of summer learning loss. Researchers could help guide interventions so that implementation lends itself to credible causal research designs, but policymakers must facilitate these collaborations and support the construction of data systems that allow for evaluation. This type of coordination is not yet the norm.

Conclusion

Despite the radically different impacts that the Great Recession and the Covid-19 pandemic have had on US society and on the US K-12 educational system specifically, we can document

[15] Such a conclusion is echoed by the Office of Inspector General's report, "Lessons from Implementing the American Recovery and Reinvestment Act of 2009," (2014).

[16] For example, the Associated Press has reported that many schools have used ESSER funds to purchase sporting equipment (2021; downloaded here https://apnews.com/article/coronavirus-pandemic-school-funding-sports-5b468b260ebd2593e53f03f9104d9bca). Stories like these have resulted in a November, 2022 Congressional hearing which raised concerns about how districts were spending ESSER funds.

commonalities in federal policy during these two crises. First, we note that the amount of aid provided during the Great Recession and the Covid-19 pandemic, though substantive and larger than any aid efforts previously made, was inadequate to meet the challenges facing US schools and students. The amount of aid provided during the Great Recession was sufficient at first but dissipated as the effects of recession persisted and adversely impacted school budgets, resulting in predictable losses to student learning (Jackson, et al., 2019; Shores and Steinberg, 2019). For ESSER, plausible estimates suggest that the aid will be insufficient to mitigate declines in student achievement resulting from the shift to remote instruction; indeed, if districts only dedicate a quarter of ESSER funds to remediation, federal aid will be vastly insufficient.

Second, federal revenues distributed via pre-existing mechanisms were poorly aligned with policy goals, provided unequal aid amounts to districts with equivalent levels of economic disadvantage, and failed to provide aid to other student groups, Black and Hispanic students in particular, whose educational opportunities were negatively affected beyond those associated with economic disadvantage.

Lastly, systems of accountability or monitoring have not been adequately constructed to determine whether federal funds were effectively used by the localities receiving federal aid. The federal government has provided an essential safety net for public schools during these two educational crises. Given that future crises are likely, it is imperative that policy and accountability structures are developed to document how expenditures are used so that the public can continue to trust that these emergency relief funds should continue to be made available. Given that the aid provided to date was likely inadequate to meet the crises at hand, and because such crises only serve to amplify extant inequalities in the educational system, any dampening of public support for federal aid will only serve to create greater educational inequality.

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Tables

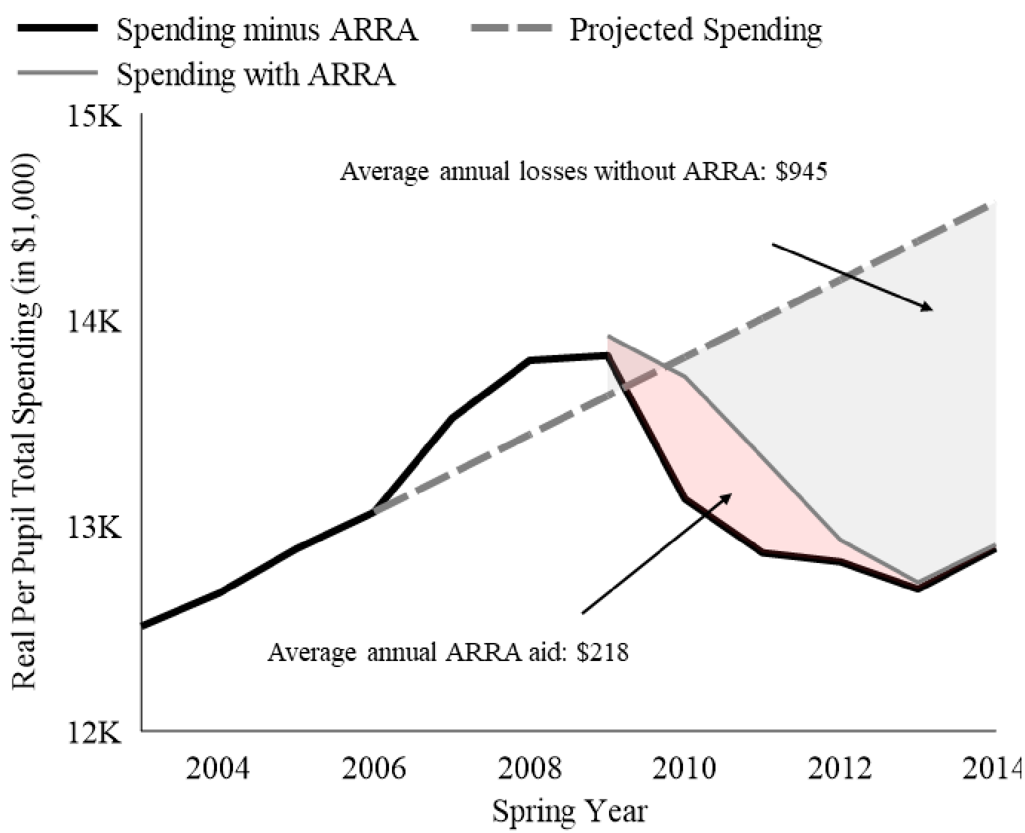
Table 1: Distribution of aid from the American Recovery and Reinvestment Act (ARRA) and Title I

	ARRA Expenditures (2008-09--2013-14)					Title I Revenues (2018-19)				
	Percent Poverty		Percent Non-White			Percent Poverty		Percent Non-White		
	Bottom Decile	Top Decile	Bottom Decile	Top Decile	State Mean	Bottom Decile	Top Decile	Bottom Decile	Top Decile	State Mean
Aid amount at the …										
10th percentile	$42	$204	$148	$138	$149	$16	$474	$89	$229	$195
25th percentile	$70	$262	$200	$195	$196	$25	$587	$169	$290	$232
50th percentile	$127	$331	$276	$274	$243	$50	$732	$301	$410	$308
75th percentile	$180	$476	$375	$401	$283	$91	$957	$465	$518	$368
90th percentile	$231	$558	$479	$476	$318	$229	$1,153	$661	$689	$433

Notes: Table depicts average ARRA aid from 2008-09—2013-14 and average Title I revenues for 2018-19. All dollar values are adjusted for the year-appropriate comparable wage index (CWI), which scales real dollars by the nationally normalized predicted salary of college-educated non-teacher workers. In each column, predicted ARRA expenditures and Title I revenues are generated for districts in the bottom and top deciles of poverty percentages (free- and reduced-price lunch for ARRA and children in poverty for Title I) and non-white percentages (the sum of Black and Hispanic student enrollment); state mean represents average ARRA expenditures and Title I revenues. In each row, predicted ARRA expenditures and Title I revenues are predicted at the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles for each of the subgroups of state represented in each column. For example, aid amount at the 10^{th} percentile for the top decile of percent poverty (column two, row 1) represents the average ARRA aid amount in 2008-09—2013-14, adjusted by the CWI, for districts with the lowest poverty rates (bottom decile) and lowest funding from ARRA (10^{th} percentile). Our poverty estimate for ARRA is based on free- or reduced-price lunch share, which features more prominently in school funding formulae than poverty estimates from the US Census. For Title I, we use the Small Area Income and Poverty Estimate (SAIPE) from the US Census, which is used to determine Title I allotments.

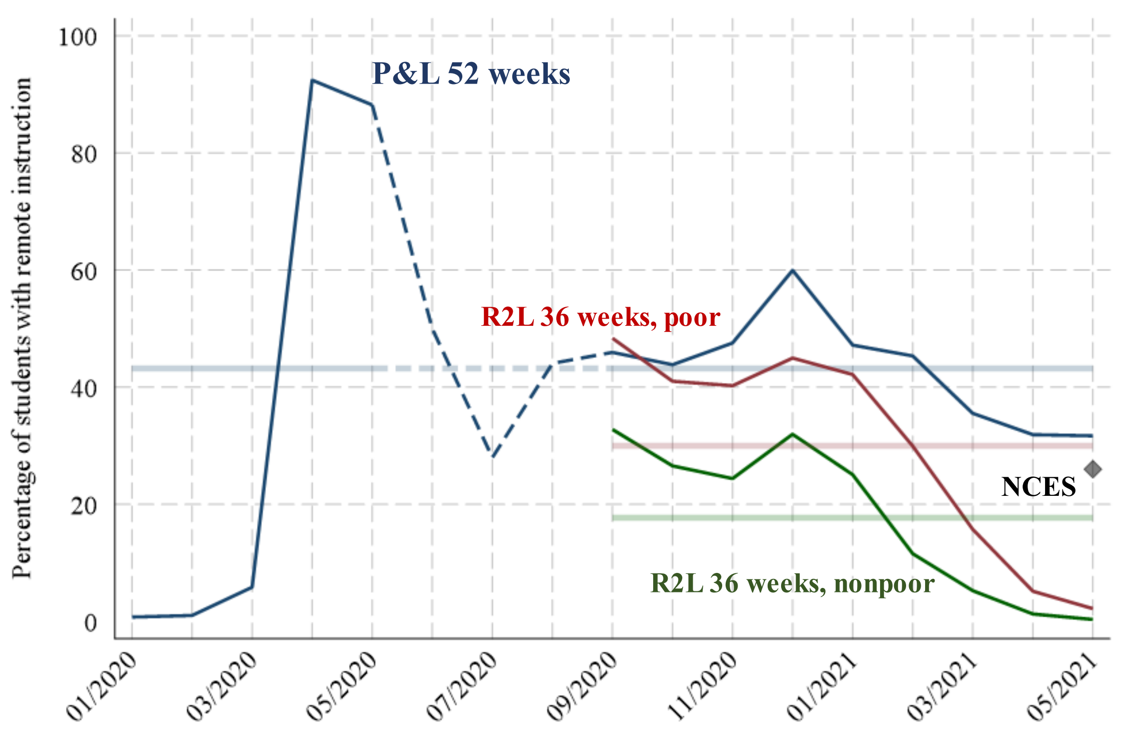
Figures

Figure 1: Change in Expenditures during the Great Recession and ARRA Contributions



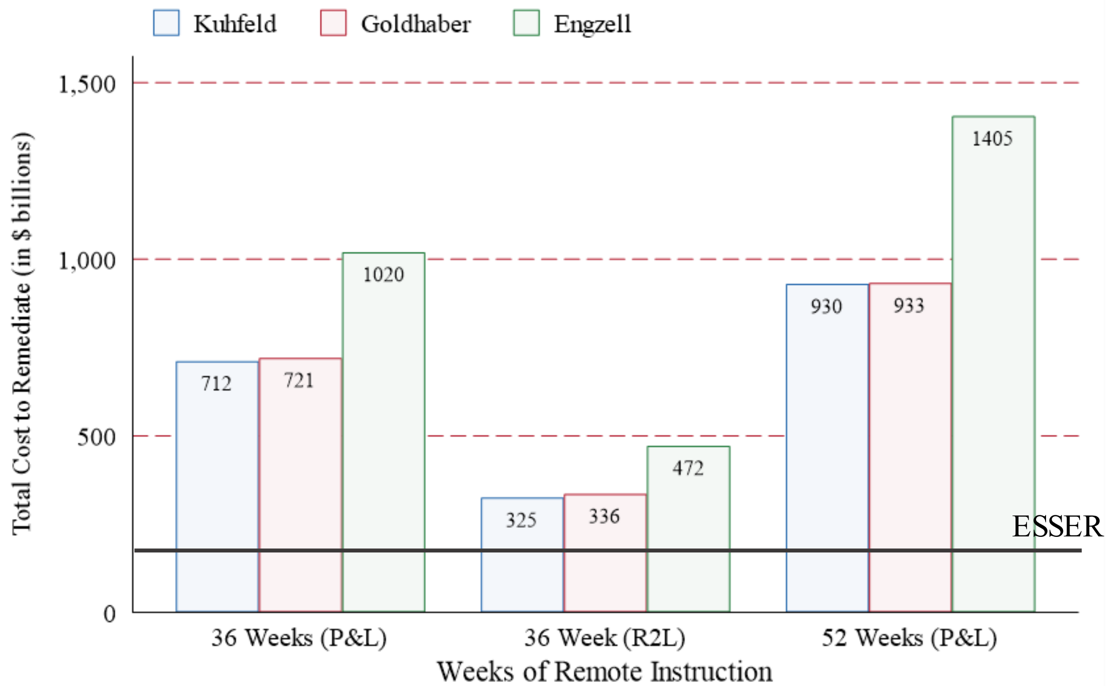
Notes: Figure adopted from Shores and Steinberg (2019) and Anglum, Shores, and Steinberg (2022). All dollar values are converted to 2016-17 values and reported in per pupil amounts. Dashed gray line represents predicted spending based on 2002-03 to 2005-06 pre-recession trends. Solid black line represents observed spending. Gray area under the curve depicts lost spending relative to counterfactual spending. Red area under the curve represents ARRA expenditures, i.e., how much lost spending ARRA offset.

Figure 2: Percentage of Students in Remote Instruction, over time, from multiple sources



Notes: P&L is based on public data from Parolin and Lee (2021) available here https://osf.io/tpwqf/. Paroline and Lee percentages are generated from aggregated and anonymized mobile phone data. R2L is based on the American Enterprise Institute *Return To Learn* tracker and are generated from educational agency self-reports, web-scraped and analyzed using machine learning and traditional data processing techniques. NCES is taken from the National Center for Education Statistics *Back-to-School* Fast Fact Sheet, available here https://nces.ed.gov/fastfacts/display.asp?id=372. Horizontal lines indicate average rates of remote instruction over the period indicated.

Figure 3: Total Cost Estimates to Remediate Lost Learning from Remote Instruction during the Covid-19 Pandemic



Notes: To generate these cost estimates, we apply achievement loss estimates from Kuhfeld (2022), Goldhaber (2022), and Engzell (2021) for low- and non-low-income students respectively. These estimates are then scaled by expected achievement effects taken from Jackson and Machevicius (2021) and then multiplied by $1,000 (i.e., the cost per pupil). Total students affected by remote instruction are taken from Parolin and Lee (2021) or the *Return to Learn* tracker (see Figure 2 above); for Parolin and Lee, we apply the same remote instruction rate to all students, and for R2L, we apply it separately to low- and non-low-income students. When weeks of remote instruction are 36, we use annual estimates of both learning loss and dollars needed to increase achievement. When the total week estimate if 52, we scale everything by $\frac{52}{36}$. Horizontal black line indicates total ESSER aid; dollar amount estimates are reported inside each bar and shown in billions of dollars.