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Assessing the Impact of Intergovernmental Grant Policies in Education - the Case of Florida

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ASSESSING THE IMPACT OF INTERGOVERNMENTAL GRANT POLICIES IN EDUCATION – THE CASE OF FLORIDA

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Nga Thi Thanh Le

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To: Dean John F. Stack, Jr.
Steven J. Green School of International and Public Affairs

This dissertation, written by Nga Thi Thanh Le, and entitled Assessing the Impact of Intergovernmental Grant Policies in Education - the Case of Florida, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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ABSTRACT OF THE DISSERTATION

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In recent decades, grant funding from federal and state governments has played an increasing role in school finance. However, prior research shows that education grants are not always effective, and the resources distributed to school districts are often not efficient. Increased federal and state funding does not always improve schools' effectiveness but instead may trigger greater bureaucracy and a mass-production vision in local education administration.

This research aims to provide a theoretical foundation for and empirical evidence on the impact of intergovernmental aid in education and inform future policy reforms. This study investigates the effects of federal and state grant policies on the quality of and access to local education services in relation to the grant designs and context of recipient local governments. This research evaluates two programs: the Foundation Program, an equalization aid, and the Race to the Top, a results-based grant.

This research relies on fiscal transfer theories to analyze these programs. The analysis employs quantitative and qualitative data from 67 Florida school districts during 2005–2016. It applies different approaches, including a goal-free evaluation, a case study,

and a quasi-experimental design. The various tools and methods utilized are difference-in-differences, spatial analysis, interaction analysis, mediation analysis, a survey, and in-depth interviews.

This dissertation's contribution to the literature on intergovernmental grants is threefold. First, this study can significantly fill the literature gaps on the impact of results-based transfers and foundation grants. Second, this research is the first empirical study considering the simultaneous implementation of the two aforementioned programs at the local level. Last, because Florida offers a representative case of both programs, these research findings could benefit public policy and administration reform across the nation.

Research findings in this study indicate limited effects of the grants, resulting from a lack of a clear and singular focus on the specified output, an absence of citizen-based accountability in the implementation, and grant fungibility at the local level. This research emphasizes the importance of grant policy formulation and the determinant role of local discretion and implementation in using higher-level government funding.

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DEFINITION OF TERMS

- Higher-level governments: federal and/or state governments
- Lower-level jurisdictions: state and/or local governments
- Subnational governments: state and/or local governments
- Transfers: is interchangeable with grants or aid
- Results-based transfers: is interchangeable with output-based transfers or performance-based transfers

CHAPTER 1. INTRODUCTION

Intergovernmental Grants in School Finance

The Evolution of Education Intergovernmental Grants

The governance of American education characterizes a federalist or decentralized structure. The federal government does not have a central role in instructing the system. Each state develops its own constitutional stipulations on education administration. Traditionally, states devolve their responsibilities to local school districts, enabling a significant role of local control in education as well as a large variety in school management nationwide. Local governments have been considered the dominant management levels in American education, especially at the beginning of the 20th century (Chubb, 2001; Guthrie et al., 1988).

However, over time, the development of the education system has come to reflect a tendency toward a more centralized system. There was an enormous consolidation of local governments in education, with the number of school districts declining substantially from about 120,000 in the 1920s to less than 15,000 in the 2000s. School districts became larger, more uniform in operations, and more subject to the control of states and professional groups (Chubb, 2001; Guthrie et al., 1988). This trend was in line with reforms in the government system. From the 1930s, with the New Deal under President Roosevelt's administration, followed by the Great Society policies of President Johnson in 1960, the roles of federal and state governments in governance were increased. This movement only started leveling off in the 1980s through the retrenchment policies of Reagan's administration to limit higher-level governments' influences (Chubb, 2001). Additionally, in education governance, the efforts to mitigate the reliance

on local dollars due to the large inequality across school districts were also initiated by school finance litigations in the 1970s (Shelly, 2011; Theobald & Bardzell, 2000).

That increase in the roles of higher-level governments in education is reflected in the proportion of school finance. Since the 1930s, federal and state governments have played a more significant role in school funding while the proportion of local funding in public education has decreased. In the 1920s, the federal and state governments provided about 18% of school funding, with federal financing accounting for 1%. The local governments contributed a primary share of 82%. The shares of federal and state governments continuously climbed during the next several decades. Since the 1980s, federal government grants have made up around 6%–8% of school funding, while the rest has been divided roughly equally between state and local governments (Chubb, 2001; Hanushek, 2001). In the 2000–2001 school year, local funds for education, on average, accounted for about 40% of national public school funding (Shelly, 2011). The total amount of educational grants transferred by federal and state governments to local governments has remained constant at around 38%–41% of local general revenues since 1982 (Wildasin, 2010).

An important point to consider is that while the federal government has been more active in guiding national education, its approach to promoting the system has changed. Wong (2013) reviewed the development of federal education programs since the 1960s and divided the process into three phases. The first phase began with the Elementary and Secondary Education Act of 1965. During this period, the federal education programs aimed at redistributive objectives by supplementing input resources for state and local governments to support students in low-income families or students

with special needs. Federal programs operated under a "categorical federalism" because they were single-purpose, formula-based programs. The No Child Left Behind Act of 2001 marked the beginning of the second phase and the shift to a "performance-based federalism" in education. States were expected to meet federal requirements on student achievements every year. The focus of the federal programs was no longer on input enhancement for some targeted groups of children but on system outcomes, i.e., increased performance of all students. Although the grants were still formula-based categorical funding, this federal policy made states and school districts accountable for education results and progress. The third phase, the "innovative federalism," started with the Race to the Top initiative under President Obama's administration in 2009. Although still pursuing the goal of strengthening the system accountability, this new phase broadened federal intervention by promoting institutional reforms and introducing the innovative mechanism of competitive grants. Wong emphasized that intergovernmental governance in education was convoluted because the new federal policies did not completely replace the previous ones. They have coexisted, leading to many challenges in the system's administration.

The intervention of higher-level governments in local public education, followed by a large number of transfers from the federal and state governments to local districts, is aimed at three main principles: equity, efficiency, and liberty (or freedom of choice) (Guthrie et al., 1988; Theobald & Bardzell, 2000). The rationales for educational transfers from higher-level governments to local governments can be summarized as (1) the constitutional obligations of states in managing and maintaining their public education system; and the responsibilities of the federal government on behalf of the

general needs and interests of the nation; (2) the necessity of financial subsidies for local governments to achieve minimum acceptable standards of public education; and (3) the economies of scale in enhancing the effectiveness and efficiency of schools in all regions (King et al., 2003). Therefore, the intergovernmental transfers in education reflect the role of higher-level governments in system adjustment regarding deficiencies in public service delivery of a federalism mechanism.

The Problems

Although the increasing resources from federal and state governments promise an efficient redistribution in funding, prior research has shown that government transfers to school districts have not always been effective. Benson and Kevin (1987) showed wide quality gaps between schools attended by low-income and middle-class students due to the lack of an appropriate financial support mechanism to increase the quality of schools on the lower end of the achievement scale. Fiscal transfers were not helping because the state equalization aid formulas were inefficient in protecting the low-wealth districts. At the same time, federal grants could not help poorer states meet national standards because of the reluctance of wealthier states in grant implementation (Benson & Kevin, 1987). According to King et al. (2003), the distribution of resources to school districts is still far from efficient. While the horizontal equity in financial resource allocation has been improved recently, the vertical equity related to the interests of different socioeconomic groups has not been considered thoroughly. Kincaid (1992) argued that an intergovernmental approach to education with increased funds and controls from federal and state governments does not improve a school's effectiveness or student achievement. It triggers problems in the education environment such as increased bureaucracy, a mass-

production vision of the education process, reduced role of teachers, or overloaded professional information for teachers.

Another point to consider is the possibility of political elements influencing the education administration at different levels of government. For example, the important role of local school districts in education administration can be regarded first as the localization of political power in the federal systems rather than public service efficiency (Guthrie et al., 1988). The establishment of a federal system is generated from the need to disperse political powers, which consequently influences the economic implications of public administration. The underlying political influences of the federalist system can be observed in the evolution of analyses in the two books by Peterson (1976, 1995), in which he showed how political factors affected the organization and operation of schools. In education finance, it might be likely that state funding in education can result from states' ambition to gain more control over local schools rather than for education development purposes.

Research Purposes and Research Questions

The purpose of this study is to shed more light on the impact of intergovernmental aid in education and inform future policy reforms. Specifically, this study analyzes the impact of grants from higher-level governments to local school districts. It assesses the effects of education grant programs in relation to their grant designs and the context of recipient local governments. By revealing the underlying rationales of grant designs, this research will analyze whether the studied transfer programs achieved their initial goals.

The overarching research question of this dissertation is as follows:

Q. What is the impact of intergovernmental grant policies in education?

This research focuses on two transfer programs: Race to the Top (RttT) in Florida and the Florida Education Finance Program (FEFP). Drawing on data from 67 school districts in Florida, this research evaluates the impact of these two programs from 2005 through 2016. The specific research questions of this research are as follows:

- Question Q1: Did RttT improve student achievement?

- Question Q2: To what extent has FEFP achieved its objectives of improving the state education system?

- Question Q3: Was there an interactive effect of the federal and state-funded programs on school districts' budgetary allocations?

- Question Q4: What is the impact of educational grants on education equity, expenditure decisions, and the performance of the selected school district?

Questions 1 and Question 2 are related to separate assessments of the selected programs, RttT and FEFP, respectively. Question 3 is about the interactive effects of the two programs that were implemented at the same time. Question 4 is related to a case study in which the research investigates the impact of the two grant policies using quantitative and qualitative data from a specific school district.

The Two Studied Programs

This research focuses on two types of transfers: A results-based transfer and an equalization grant. The two specific programs in practice to be investigated are the Race to the Top (a results-based transfer) and the Florida Education Finance Program (a foundation program). This section explains how a study on the selected studied programs can contribute to understanding the effectiveness of intergovernmental grants in American education.

The Race to the Top program

The Race to the Top (RttT) program was an education results-based transfer from the federal government to states during 2009–2015. In 2009, under the American Recovery and Reinvestment Act, the Race to the Top (RttT), a competitive educational grant program, was instituted. It is a large federal grant of 4.35 billion dollars and was implemented during 2010–2015. As a result-based grant, the program attempted to create changes in the education system, with improved student achievement as the ultimate goal (Dragoset et al., 2016). The program objective was to "implement large-scale, system-changing reforms that improve student achievement, close achievement gaps, and increase graduation and college enrollment rates" (US Department of Education [USDOE], 2012, p. 21). Specifically, the program was designed with four main areas:

1. Adopting standards and assessments that prepare students to succeed in college and the workplace and to compete in the global economy;
2. Building data systems that measure student growth and success and inform teachers and principals about how they can improve instruction;
3. Recruiting, developing, rewarding, and retaining effective teachers and principals, especially where they are needed most; and
4. Turning around our lowest-achieving schools. (USDOE, 2009, p.2)

As a competitive grant, the awards were given to states that achieved high points in terms of a strong record of educational reform and a robust plan to continue developing reform policies in the future. The selection criteria included six main aspects: state success factors, standards and assessments, data systems to support instruction, great teachers and leaders, turning around the lowest-achieving schools, and general selection

criteria (i.e., education funding as a priority and other significant reform conditions). There were three phases of competition in March 2010, August 2010, and December 2011. Across the three phases, 46 states and the District of Columbia submitted their applications for the grant. Nineteen states participated in the program during three rounds of competition (Dragoset et al., 2016; USDOE, 2009).

These winning states had to commit to implementing the proposed plans they submitted to the US Department of Education. They also needed to allocate at least half of the funds received to participating local education agencies (LEAs), after which the selected states had discretion in using the remaining funds for other activities in their plans (Dragoset et al., 2016). Based on the states' capacities and commitments to achieve outputs outlined in their education plans, the RttT's grant structure aligned with the results-based transfers criteria.

There are several reasons that a thorough analysis of the effectiveness of the RttT is necessary to improve education grants. *First*, the mechanism of results-based transfers is more likely to help achieve expected education goals than other grant types. Results-based intergovernmental transfers are considered more efficient than the traditional inputs-based grants because of their potential to result in the accountable and responsive performance of subnational governments while still enabling broad local flexibility. Additionally, in education, the principles of results-based transfers fit in with the mechanism of an educational accountability system. While the American education system has been focusing on accountability, these characteristics make results-based grants promising measures of education aid. (*Further explanation of these arguments is provided in Chapter 2*)

Second, there are few empirical studies on results-based transfers, especially the impact of this type of transfer in the US. Steffensen (2010) studied the experience of 15 Asian and African countries using performance-based grant systems. He showed that the results-based approach has helped local governments improve both transparency and accountability upward (to higher-level governments) and downward (to citizens). The incentives from performance-based grant programs could enhance cross-cutting issue intervention, local governments' capacity building, and coordination among relevant development stakeholders. More importantly, the output-based approach was likely to lead to higher efficient and sustainable service delivery in these countries. The challenges in applying results-based grant mechanisms were the costly and complicated methods required to assess outputs due to the weak management capacity of local and central governments and sometimes the lack of political will to conduct sanctions in case of poor implementation of local governments.

In America, the Beeck Center report (2015) emphasized the emerging attention of governments at all levels on output-based contracts and grants. Examples provided include the following initiatives: The Innovation Funds, Pay for Success Pilots, Performance Partnership Pilots, and Pay for Performance. The benefits of these novel measures were described as follows:

> These programs are creating incentives for providers to achieve real outcomes, develop metrics to achieve those goals, and create more transparent, data-driven public private partnerships. Governments are discovering that reorienting funding toward outcomes can help meet the goals of responsible public stewardship and

> create lasting impact in the lives of citizens and communities. (Beeck Center, 2015, pp.8-9)

Regarding educational grants, the No Child Left Behind Act in 2001 was considered a results-based transfer targeting K–12 schooling. Additionally, most states allocate financial aid contingent on performance for higher education. For example, in South Carolina, all universities are evaluated for funding by 37 indicators. Tennessee has four criteria as conditions for transferring 6% of a university's revenue (Shah, 2010). However, studies on the impact of educational grants in the United States under output-based transfers are scant.

Third, RttT presents a good case to assess the impact of education results-based grants as well as the recent federal interventions toward educational accountability. As discussed above, RttT is not the only output-based program. In 2002, No Child Left Behind (NCLB), an update of the Elementary and Secondary Education Act, was signed into law by President George W. Bush. Subsequently, in December 2015, Congress passed the Every Student Succeeds Act (ESSA) to replace NCLB. Both ESSA and NCLB focus on promoting student achievement and holding schools accountable for students' academic outcomes. ESSA is considered a development step to fix some problems of NCLB by enabling states to be more flexible in setting goals and managing the implementation process (Klein, 2015, 2016). While ESSA was in effect during the 2017–2018 school year, after the completion of RttT (Klein, 2016), NCLB was still being carried out during the effective period of RttT. Different from NCLB, not all states participated in RttT. At the same time, NCLB was able to "provide a foundation for RttT," and RttT also could "encourage more sophisticated ways of measuring student,

teacher and school performance" (Lohman, 2010, Summary section, para.3). Therefore, RttT can be considered an innovative results-based grant in the context of an education system pursuing higher accountability. Thus, the lessons learned from this novel initiative could prove very helpful for future output-based education programs.

Fourth, empirical research analyzing the effectiveness of RttT is lacking. Extant research on RttT's impact has examined different aspects of the program. Some studies focused on progress made in promoting educational reform policies. For example, Howell and Magazinnik (2017) reported that RttT succeeded in reforming educational policies throughout the nation, not just in the participating states. Likewise, according to the most recent evaluation report conducted by the US Department of Education, there is evidence that, on average, RttT-participating states put more reform policies and practices into effect than non-participating states. When considering the variation within both RttT-participating and non-participating states, some non-RttT states enacted more RttT-promoted policies than the average level of the RttT-state group (Dragoset et al., 2016).

Other studies evaluated RttT by investigating the teaching and education assessment process changes resulting from the RttT reform policies. Boser (2012) considered how successful each RttT-participating state was in carrying out their RttT reform agenda regarding implementation progress, teaching and testing standard, collaboration, etc. Weiss (2013) examined the program's progress after the first 3 years and pointed out challenges for states' progress in RttT implementation, including the infeasible goals and novel system of teacher and leader evaluation. Viteritti (2012) analyzed the initiatives of RttT in terms of testing tools and standards, teacher evaluation,

and measures to support failing schools and charter schools. Some studies assessed the effects of turnaround strategies to improve low-performance schools under the RttT framework in specific states, for example, North Carolina (Heissel & Ladd, 2018) and Tennessee (Zimmer et al., 2017). Additionally, several studies showed other concerns, such as the impact of RttT on social equity. Jahng (2011) stated that performance-based accountability policies as reforms in RttT and NCLB did not help to improve the inclusion of minority children in society. Finley (2015) asserted that RttT's strategy of supporting charter school development was not likely to help minority and low-income students.

The 2016 report by the US Department of Education assessed the relationship between the program implementation and student outcomes—the final goal of the program. Unfortunately, due to limitations on comparable data on student outcomes at the state level (data on test scores from the National Assessment of Educational Progress (NAEP)), this report could not find a clear correlation between RttT spending or RttT program performance and student outcomes (Dragoset et al., 2016). Thus, empirical studies assessing the effectiveness of RttT and utilizing an output-based approach are lacking.

Foundation Program

A foundation program is an equalization grant in education and represents the most popular financial support mechanism for education by states for local school districts. A recent survey of the public education finance system of the 50 states concluded that 37 used foundation programs as their primary education finance policy and 45 used foundation programs along with other grant policies (Verstegen, 2014).

Since the 1920s, foundation programs have been a tool for reducing the disparities in incomes between school districts within states (Brimley et al., 2016). The evolution of foundation programs now requires researchers to adopt a broader approach by considering education efficiency and adequacy impact, in addition to equalization effects (*further provided in Chapter 2*). An updated viewpoint on foundation grants, thus, can contribute to the literature on equalization transfers.

Why Florida?

Race to the Top in Florida. Florida was the state that received the largest award under RttT and showed a strong commitment to the implementation process. As one of the 19 states participating in RttT, Florida began deploying the program in August 2010, and completed it in June 2015. Florida did not initially succeed in the first round of the competition, although its score was close to those of the two winners. It demonstrated its readiness and determination in pursuing RttT's goals clearly in the second round and was awarded a grant. Throughout the three phases of the competition, Florida received the largest award possible from RttT, 700 million dollars. The percentage of LEAs involved in RttT in Florida was very high, at 98% (Dragoset et al., 2016). According to the fourth annual report on Florida's RttT by the US Department of Education, 65 LEAs, equivalent to 65 school districts, took part in the program (USDOE, 2015a). Only five school districts did not.[1]

[1] There are approximately six school districts for special education in Florida. The statistical data for these districts are sometimes not provided when there are less than 10 students in the districts. The study, therefore, only examines the other major 67 school districts in Florida.

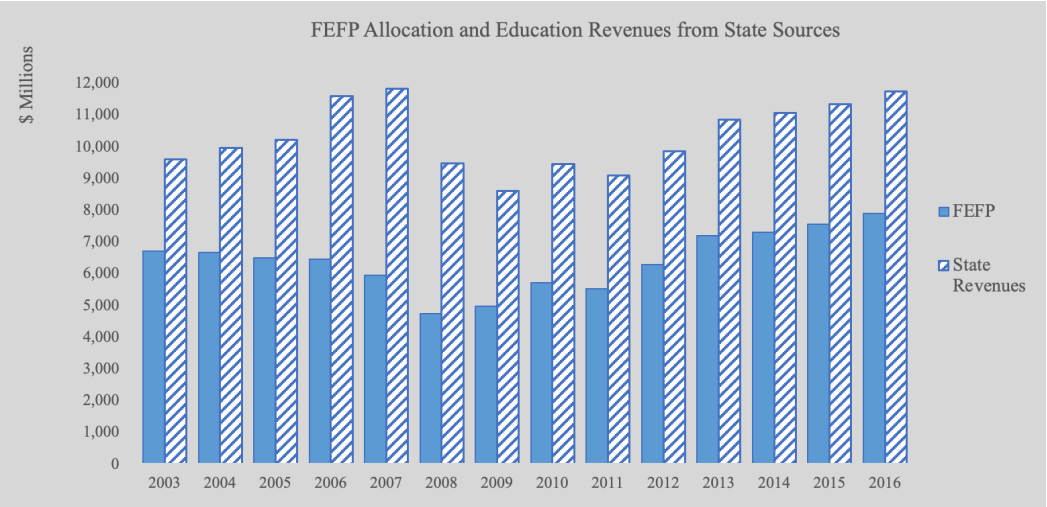
In a state-by-state evaluation after the first year of implementation, a report issued by the Center for American Progress identified Florida as the only mainland state that did not meet the program's expectations (Boser, 2012). However, Florida improved when the graduation rate in the state increased. At the end of the program, RttT was considered to have made a significant, positive intervention in Florida's education system (USDOE, 2015a; Evergreen Solutions [ES], 2015). The state's strong commitment to, and the large size of, the Florida RttT program present excellent opportunities for research on the results of RttT in the state.

Florida Education Finance Program. Florida's foundation grant has been implemented for nearly 50 years and has been conducted under the Florida Education Finance Program (FEFP) since 1973. The program's objective is to increase the educational access of residents of the state. It aims to ensure Florida's education programs and services are available equally to all students in the public school system, regardless of geographical and economic conditions (Florida Department of Education, 2018a).

The FEFP is considered a primary source that the state transfers to school districts toward a better education system. During 2003–2016, the proportions of FEFP in total local revenues received from the state were 50%–70% (Figure 1). Other minor funds from the state often include race track funds divided equally among counties, and other revenues distributed to counties according to state laws, such as tax funds from state forests and mobile home licenses revenues (Florida Department of Education, 2018a). FEFP, therefore, significantly presents the intervention of the state on education management in local school districts. Moreover, Florida has incorporated into its grant

formula nearly all adjustment factors that other states have applied (Verstegen, 2014). It is expected that an analysis of Florida's foundation program will serve as a robust representative case for the application of foundation programs in practice.

Figure 1. FEFP Allocation and Education Revenue from State Sources



Source: Data were collected from the Florida Department of Education's official website

Assessments of the FEFP have focused on its general impact on equity in Florida's school system and the individual factors in its grant formulas. In the 1970s and 1980s, FEFP was not likely to improve the revenue disparities across the state's school districts (Alexander & Shiver, 1983; Carroll, 1979). Examining data from the 1975–1976 school year, only two years after FEFP's launch, Carroll (1979) compared the revenue disparities across school districts in Florida. He concluded that FEFP seemingly widened the revenue differences and had the tendency to benefit larger and more urban districts with higher revenues. Shiver and Alexander found similar results of less equalization and an increasing disparity in revenue distribution in Florida when investigating data on per-pupil revenues during 1970–1981 (Alexander & Shiver, 1983; Shiver, 1982). Later,

studies showed a more positive impact, together with some concerns. The objective of equalization was fulfilled, but the effectiveness of some cost indices needed to be considered further (the Office of Program Policy Analysis and Government Accountability, 1996); the equalization goal was achieved, but education needs and adequacy were not resolved (Herrington & Trimble, 1997); the program induced improved horizontal equity but in a "quadratic pattern" (Mendonca, 2001); and there might have been a compromise between adequacy and equity (Tachon, 2008). Meanwhile, Bowden (2009) examined data from 1970 to 2009 and found a high level of equity in resource distribution among school districts. A more recent study by Dorn and Michael (2012) presented evidence explaining these varied results. They observed that FEFP appeared to benefit urban and larger counties and did not generate much equity in the first few years of its implementation. As Florida's demographics changed with more large urban areas in the following years, the program likely produced more equity (Dorn & Michael, 2012).

The factors in the grant formula include discretional millage rates (Dewey et al., 2004, Maiden & Wood, 1995), the index for exceptional education students (Mongelli, 1999; Sutton, 1998), the cost of living index and sparsity index (Dewey et al., 2004), the poverty weight (Daniel, 2010), and the index for English Language Learner students (Longa, 2015). The research findings included both negative and positive relationships. The result is understandable when considering the fluctuation in the above conclusions on the overall impact of the whole program.

The effects of the grant program in Florida today seem unclear, with the effectiveness of different components of the grant formula under debate. Previous

research focused on the equalization impact of FEFP. It examined the program effectiveness in equal distribution of resources through per-pupil revenues/expenditures or some indices such as the Gini coefficient and McLoone index. However, they did not focus on the mechanism nor the structure of the grant formula. Additionally, the literature was devoid of comprehensive assessments of the FEFP's impact relating to equality, efficiency, and adequacy. By applying a broader approach and investigating the grant formula discreetly, this research is expected to fill the gaps in the literature on FEFP assessment.

Florida, therefore, presents a representative and intriguing case to study the effect of the two programs. Moreover, by examining the two programs in Florida, this study is expected to be one of a few that reveals the interactive influences between a long-term subsidy from the state and a supplement fund from the federal government.

Significance of the Study

The contribution of the research to the literature on intergovernmental transfers can be summarized in three points. First, the study can significantly fill the gaps in the literature on the impact of results-based transfers and equalization grants. Few empirical studies have investigated the implementation and effects of results-based transfers. While RttT is a recent federal intervention focusing on educational accountability with an outputs-based approach, empirical research analyzing the effectiveness of RttT is lacking. Most studies on RttT examined the progress in promoting state reform policies or the teaching and learning process resulting from the reform. Regarding equalization grants, this research applies an updated viewpoint to the foundation program analysis, including education efficiency and adequacy, in addition to horizontal equalization effects. This

revised approach is helpful because extant assessments of the FEFP focused on the equal distribution of resources. The literature lacks a broader review of the FEFP's influences on equality, efficiency, and adequacy.

Second, this research provides a more comprehensive picture of education grants by examining the results of simultaneous implementation of RttT and FEFP. There are scant studies on the dynamics in state-local transfers when having additional funds from the federal government, i.e., mutual effects of concurrent transfers from federal and state governments. This research investigates the long-term aid from the state (FEFP) and the subsidy from the federal government (RttT) in consideration of local control of education.

Last, because Florida provides a representative case in the implementation of both programs, the findings of this research can benefit policy formulation across the nation. Florida received the largest award from RttT and showed a strong commitment during the implementation process. In addition, while most states have conducted foundation programs as a primary education finance policy, FEFP has been implemented for nearly 50 years in Florida and considered an important resource for Florida school districts.

Structure of the Dissertation

Chapter 2 reviews relevant literature regarding intergovernmental transfers and the management of education grants at the subnational level. The theoretical framework and overall methodological approach of the analyses are discussed in Chapter 3. Chapter 4, Chapter 5, Chapter 6, and Chapter 7 describe specific methods and findings relating to the minor research questions. Specifically, the methodology, analysis results, and discussion on the impact of RttT are explained in Chapter 4; FEFP is presented in

Chapter 5; the interactive effects of the federal program are presented in Chapter 6; the effects of educational grants on expenditure decisions and the performance of school districts are explained in Chapter 7. Finally, the overall results and conclusion of the dissertation and policy implication and recommendations are presented in Chapter 8.

CHAPTER 2. LITERATURE REVIEW

Intergovernmental Transfers in a Federalist Mechanism

The Administrative Role of Intergovernmental Transfers

One important feature of fiscal relations in a multitiered government is decentralized public services (Boadway, 2001). Local provision of public goods enables the goods to be closer to the preferences of different groups of the population. It can also induce more innovation policy reform and cost-effectiveness in public programs because each state and local government can initiate new approaches to policy issues as well as imitate and compete with their neighboring jurisdictions. Fiscal decentralization may reduce the administration cost by overcoming the information asymmetries and adverse impact of multilayers of bureaucracy. As a result, a federalist mechanism enables a more favorable condition for higher quality public goods (Boadway, 2001; Musgrave, 1997; Oates, 1972; Oates, 2008; Stiglitz & Rosengard, 2015).

However, fiscal decentralization in federalism triggers inefficiency and inequity. Inefficiency results from externalities of local decisions and competition among communities, which originates from mobility of capital and human resources. At the same time, free migration and the diverse capacities of different communities can lead to situations in which local programs do not conform with the national interest and distort the principles of equal treatment of equals (Stiglitz & Rosengard, 2015). Boadway (2001) also identified two forms of vertical and horizontal fiscal externalities. Peterson (1995) mentioned the “price of federalism” as the social cost of regional inequality and administrative inefficiency that multi-order federalism systems must bear. For example, a “race to the bottom” occurs among jurisdictions in welfare service provision, whereas

larger grants might be transferred to states with higher fiscal capacity. Consequently, these distortions bring about some trade-offs in the system and require coordination and adjustment by the central government. Boadway (2001) concluded that there is a trade-off between the benefits and costs of fiscal decentralization. Oates (2005) affirmed a trade-off between local accountability and central coordination.

Intergovernmental grants from higher-level governments have been used to stimulate subnational governments to provide an efficient level of public goods, thereby creating essential tools to control for spillover effects of local provision (Oates, 1972). Ahmad and Craig (1997) suggested that the system of transfers among different government levels aims to fix the vertical and horizontal imbalances of the federalist system. The government employs intergovernmental transfers to reach fiscal stabilization, equity, and efficient use of resources (Ahmad & Craig, 1997).

Taxonomy and the Impact of Grant Transfers

In general, a taxonomy of grants can imply a possible impact. Intergovernmental transfers are often categorized as either conditional/specific-purpose or unconditional/general-purpose grants (Ahmad & Craig, 1997; Boadway & Shah, 2009; Oates, 1972). Each of these types has advantages and disadvantages in practice. According to Gamkhar and Shah (2007), general-purpose grants provide financial support to subnational governments without any conditions attached. The grants enable local autonomy and flexible spending. However, these grants can influence subnational governments' expenditures more than predicted. This phenomenon, the so-called "flypaper effect," occurs "when a dollar of exogenous grants-in-aid leads to significantly

greater public spending than an equivalent dollar of citizen income: Money sticks where it hits" (Inman, 2008, Abstract section).

Meanwhile, specific-purpose grants are transferred to state and local governments to stimulate these subnational governments to undertake specific programs or policies. The most important determinant of success of a conditional grant is its particular objectives decided by granting agencies. Traditionally, granting agencies design a conditional grant with specific provisions on input factors, e.g., provisions related to reporting and operational auditing. Empirical and theoretical studies have shown that this input-based, command-and-control mechanism potentially constrains local autonomy and adds to administrative burdens. When grant recipients have limited control over how to spend the money, local objectives and priorities can be undermined. Additionally, the intended results of grant programs are not ensured due to the weak accountability of the recipients. Consequently, input-based conditional grants can be inefficient (Beeck Center, 2015; Shah, 2010). Recently, output-based conditional grants have been advocated as a more advantageous measure as a result of flexibility upon implementation (Beeck Center, 2015; Shah, 2010; Steffensen, 2010). The reasons for this will be discussed further in the following session.

Results-based Transfers

Concept

Different from the traditional input-based conditional grants discussed above, output-based, results-based, or performance-based transfer grants are specific-purpose grants with pre-identified outputs that all recipients are required to achieve. A predominant feature of the results-based grants is a connection between grant access and

service delivery. To receive transfers, subnational governments are required to meet minimum output expectations. Additionally, in some cases, grant program performance can be measured during the implementation process to decide the size of the grants. In other words, the conditions of output-based grants are set on their target results (Shah, 2010; Steffensen, 2010). Another important feature is that the recipients have discretion in both program design and the disbursement plan. Through this approach, the development goals become the focus, while the subnational authorities can maintain flexibility in choosing the measures to attain these goals (Shah, 2010; Steffensen, 2010).

Boadway and Shah (2009) argued that conditional, non-matching, output-based grants are the most suitable type of transfer grants to use when the central government requires enhanced accountability from subnational governments in terms of grant results. A report issued by the United Nations Capital Development Fund (UNCFD) called for a broader application of performance-based grants due to their effectiveness and efficiency at the local level (Steffensen, 2010). The Beeck Center of Georgetown University in 2015 indicated that these grants reflect a shift from tracking compliance to focusing on quality of services. In the US, this innovative approach has been applied since George. W. Bush's administration and has affected all levels of government, from local to federal (Beeck Center, 2015).

Advantages

The fundamental reason why a performance-based grant is preferred by grantors is that it allows higher-level governments to resolve the dilemmas of local accountability and local autonomy simultaneously in disbursing the grant funds. In public goods and services provisions, the principals are the citizens, and the agents are the public officers.

The principal–agent problem emerges when the agents' preferences do not align with the principals' interests and there is information asymmetry between the two (Frederickson et al., 2012). In this case, the agents—officials of the recipient governments—are equipped with more adequate information but might withhold information in order to reduce their level of accountability to the public. Meanwhile, the principals—the citizens—have to bear high transaction costs in order to access accurate information. Consequently, an opportunistic agent can restrict the flow of information to the public, creating the aforementioned dilemma (Shah, 2010).

The causal relationship between grant access and public services leads to a linkage between grant absorption and local performance with the results-based approach. Recipient governments have incentives to enhance their performance. Results of the program and the degree of goal achievement through measurable indicators are required to be reported and disseminated. Grantors can shift from "ex-ante control" to "ex-post monitoring and assessment" (Steffensen, 2010; Steffensen & Larsen, 2005). Citizens can access information at lower transaction costs. The connections among governments at all levels and between the subnational governments and the residents and nongovernmental organizations are strengthened. Trust between the principals and the agents is easier to obtain because of the shared goals and stronger connections. Those implementing the program must show higher accountability throughout the process due to clear output indicators. However, recipients'autonomy is ensured. Grant beneficiaries can determine the inputs for the funded programs so that these inputs align with their local circumstances. As a result, performance-oriented grants are more likely to result in the accountable and responsive performance of subnational governments (Shah, 2010).

Another principal–agent relationship in grant management can be the interaction between higher-level governments –grantors and the subnational governments—grant recipients. The output-based approach also presents an efficient strategy in this case. According to Eisenhardt (1989), agency theory analyzes the cooperation between a principal "who delegates work" and an agent "who performs that work" by using the "metaphor of a contract." Options for the two parties are behavior-oriented contracts and outcome-oriented contracts. Outcome-based contracts appear to restrain the opportunism of the agent and lead their activities more toward the interests of the principal. The reason being that the outcome orientation can generate the same preferences for both parties, thereby decreasing the interest conflicts between them. Moreover, outcome-oriented contracts are especially helpful when the principal does not have sufficient information to verify the agent's operation (Eisenhardt, 1989). The results-based grants, therefore, can be an efficient strategy because they can bring about common goals between donor and recipient governments and help the donors to overcome the information shortage caused by the administrative space between the two.

Furthermore, results-based transfers seek positive changes in subnational governments' activities. Performance-based grants with flexibility in budgeting and emphasis on performance tend to result in improved capacity-building activities at the state and local levels and involvement of relevant private and nongovernmental organizations (Boadway & Shah, 2009; Steffensen, 2010). The beneficiary governments become either better service providers or wise purchasers of better services. The participation of nonpublic providers enables competition and innovation in grant program implementation, leading to higher quality in public services. Through criteria relating to

fund access, output-based grants not only present a means to materialize development goals, but also a measure by which higher-level governments can encourage lower-level governments to make changes (Steffensen & Larsen, 2005).

Results-based Transfers and the US Educational Accountability System

According to Hanushek and Raymond (2001), the national education policies have been moving toward an accountability system due to the sluggishness in student outcomes in the preceding period. While the traditional development strategies concentrated on inputs and the education process, the reform shifted the focus to student achievements, thereby holding public schools more accountable for educational results. At the same time, this new mechanism has left room for implementers' discretion with the assumption that the desired goals could motivate relevant stakeholders such as schools, teachers, and local managers to change or adjust to improve their efficiency. Therefore, the principles of output-based grants fit in with the mechanism of educational accountability. The utilization of results-based transfers in education are convenient and significantly promise effectiveness.

However, it should be noted that output-based funding must adhere to specific protocols. Grant objectives should be based on outputs, not on input factors nor on outcomes of the development process (Boadway & Shah, 2009). The subnational governments receiving the grants should be responsible for the subsequent results of the programs. Longer-term impacts of the programs should be recognized as being influenced by factors beyond the sphere of the programs. It is necessary to be more cautious when applying this condition in education. Hanushek and Raymond (2001) show that an educational output in an accountability system would reflect an intertwinement of

educational goals, standards, and measurements. Educational goals are often too ambiguous to be approved by the legislature. Educational standards are the interpretation of goals and are expected to be clear and concrete. Straightforward standards, nevertheless, might fail to take into account the diversity in teaching and learning approaches, hence doubtful effectiveness for better performance. Meanwhile, measurement is often in question regarding the validity and reliability of selected tools to assess the match between performance and standards. Furthermore, there are various methods that states can choose with different trade-offs (Hanushek & Raymond, 2001).

Moreover, the difficulty in identifying appropriate outputs for an output-based educational grant also stems from a paradox in educational accountability. Although the accountability system aims for better performance in education, excessive engagement in the system may impede further improvement in the system's operation. Halachmi (2002) argued that better accountability and higher productivity could imply two different movements. The former is about efforts to achieve pre-identified performance standards with allocated resources, and about the ability to stick to established plans. Meanwhile, the latter relates to progress, innovation, and adaptation, that is, the learning process of an organic organization. Consequently, the condition for productivity enhancement, which is the possibility to diverge from approved contracts, is not viable when pursuing accountability. In education, Ryan (2005) argued that educational accountability seemed to serve audit objectives rather than to promote teaching and learning. Therefore, the potential problem of this government transfer is that educational results imposed by donor governments could bring about schools' commitments to improved performance, but at the same time, could be a hindrance to increased efficiency.

Equalization Transfers and the Foundation Program

Equalization Transfers

Concept. An equalization grant is a tool that higher-level governments utilize to increase the horizontal equity across lower-level jurisdictions. A decentralized system innately results in disparities in net fiscal benefits (the gap between public spending and tax burden) among regions. Consequently, residents earning similar incomes but living in different areas are not likely to have access to the same public services and may consider relocating for better public benefits. This triggers fiscal inequity and inefficiency across jurisdictions, requiring a correction through horizontal equalization grants (Boadway, 2007; Shah, 2007).

According to Reschovsky (2007), the equalization transfer may aim for three main goals. First, all residents should be able to access the basic level of public services without regard to their places of residence. The equalization grant should compensate for the disparities between the minimum amount of spending required for the basic services (i.e., expenditure needs) and the expected revenues (i.e., income raising capacity) of the recipient governments. Second, higher-level governments should attempt to reduce the fiscal disparities among subnational governments. Some jurisdictions may have a lower capacity in revenue-raising or higher expenditure needs, leading to a larger fiscal gap (need-capacity gap) than others. Grant programs should fill proportionally the fiscal gaps or distribute aid only to the jurisdictions with the largest gap. Third, equalization aid should ensure taxpayer equity; that is, citizens who pay the same tax rates are provided the same level of public services, regardless of their location. The transfer, in this case,

relates to the fiscal capacity, public service costs, and tax rates of each recipient government (Reschovsky, 2007). Overall, horizontal equalization programs seek equalized net fiscal benefits across regions. The transfers need to deal with estimating costs and benefits of public services in subnational governments. This also means that to make decisions on equalization grants, donors have to acquire two kinds of information: (1) fiscal capacities or revenue-raising capacities, and (2) needs and costs of public services provided by recipient governments (Boadway, 2007; Ladd, 1994; Shah, 2007).

Formula. The formula of equalization transfers can be written as follows:

$$\textit{Equalization grant} = \textit{Expenditure need} - \textit{Revenue raising capacity} \quad (1)$$

Between the two main components of the equalization formula, the *spending requirement* (or *expenditure need* as in the formula*)* for the equalization goal is often considered more challenging to identify. The first challenge is defining basic levels of public services or the equalization standards. Different regions have different needs for general public services and educational public services, in particular, due to discrepancies in demographic and socioeconomic characteristics. Education needs may vary depending on age structures, health indicators, poverty situations, etc., of a region (Boadway, 2007; Shah, 2007). Another issue is the diverse costs of public services across jurisdictions. According to Reschovsky (2007), disparities in costs can result from differences in (1) the set of inputs required for public services (contingent on technology, labor skills, etc.), (2) input prices (e.g., labor wage), (3) environmental characteristics (e.g., rural and urban areas, weather), and (4) sociodemographic characteristic (e.g., population density, economies of scales). It is essential to point out which are influential factors and their relative weight of influence on service costs to identify costs of public services.

Furthermore, factors to be considered for cost adjustment should not be under the control of recipient governments. In general, the costs should not be able to be altered by policy choices, decisions on service preferences, or the administrative capacity of recipient governments. If subnational governments can receive compensation for the costs they can control, it would influence their strategic behaviors in order to collect more aid (Downes & Pogue, 1994; Ladd, 1994; Reschovsky, 2007; Shah, 2007).

Revenue raising abilities of subnational governments are often estimated by property tax revenues. This follows the representative tax system approach. The fiscal capacities of jurisdictions could be interpreted as their property tax bases. This approach provides a simple method for higher-level governments to estimate local revenues (Ladd, 1994). The concern is the possible constraint on revenue sources that recipient governments could choose to contribute to the grant, thus limiting the unconditional feature of equalization transfers. Another point is that the encompassment of tax effort could lead to tax increases in poor regions (Shah, 2007).

Foundation Program

Concept. The foundation program represents an equalization grant in education. It is a transfer from states to local school districts in order to equalize education opportunities for all students. It enables a scheme that can strengthen education systems at the district level by providing additional funding per-pupil (or sometimes per teacher). Local governments finance their schools with local tax revenues (usually property tax incomes). States then fill the gap between residents' needs and local contributions by funding allocation through this program. Wealthier districts often have more revenues due to higher property values. The equalization effect happens when the grant can cover

the disparities in education budgets among school districts up to the foundation level. Foundation programs enable all school districts to meet a basic, minimum education level (the foundation level) that states decide (Verstegen, 2011).

Similarly, Fisher (2007) argued that this aid is a lump-sum grant because it does not depend on the districts' school expenditures. The foundation aid per student is identified based on the education costs in districts and inversely on districts' wealth. The aid formula represents the difference between the basic per-pupil foundation level and local districts' property tax revenues that are calculated by a fixed basic property tax rate and respective property tax bases of districts (Fisher, 2007). Foundation grants, therefore, relate to three main elements: (1) a foundation level that states decide to provide to each student, (2) expected local revenues with a uniform tax rate, and (3) the grant amount equivalent to the difference between the two former elements (Brimley et al., 2016). To understand the foundation grants more thoroughly, it would be helpful to analyze the program under the framework of horizontal equalization transfers.

Formula. Downes and Pogue (1994) delineated a specific grant formula for the foundation aid (except the tax rate, all other variables are computed per student):

$$\textit{Foundation grant} = \textit{Foundation level of spending} - \textit{Foundation tax rate} * \textit{local property value} \quad (2)$$

This formula describes foundation transfers as a gap between basic education needs and available local revenues to satisfy them. In theory, the aid may be zero if local revenues (identified by foundation tax rates and property tax bases) are equal to or larger than the foundation spending (for basic needs). This situation can be precluded if the foundation tax rate is defined as a quotient of the foundation spending level divided by the highest

property value in the state. Foundation grants can enable equal education opportunities and outcomes only when (1) all local districts in a state impose a property tax of foundation rate, (2) the foundation level of spending is implemented in all districts, and (3) the service costs per student across regions are the same. However, practices in school districts often do not satisfy these conditions (Downes & Pogue, 1994).

Challenges. As discussed above, cost estimation needs to be done to identify *expenditure needs* (*foundation level of spending* as in the formula) in foundation transfers. Cost differences may result from a school district size, enrollment growth, sparsity, or teaching skills. The grant formula often has cost adjustment factors added to the foundation level of spending. Cost adjustment factors in the foundation grant formula reflect varying prices different regions pay to reach an equivalent foundation level of education service. The equalization effect of the grant, thus, relies on the validity of the cost adjustment. This modification is then subject to the identification of selected education outputs taken to calculate the basic needs (Downes & Pogue, 1994).

Regarding revenue-raising capacity measurement, property tax is not necessarily the only tax base to be included. Nonetheless, local contribution in foundation programs should be measured by other tax bases only when those taxes are practically used to pay for the foundation education needs (Downes & Pogue, 1994).

Fisher (2007) summarized the evolution of the education foundation policy and argued that foundation programs did not help equalize education spending among school districts because local governments could choose to set local property tax rates higher than the basic tax rates identified in the aid formula. Consequently, the grant amounts would not totally offset the differences in revenues among school districts (Fisher, 2007).

In other words, local governments can raise funds through additional property taxes, but this additional funding would not be equalized by the state (Verstegen, 2014).

The property tax incorporated in the grant formula, with its characteristics, causes some issues in the operation of foundation programs. Kraft and Furlong (2015) argued that although local property tax helps to ensure the independence of the local government in school management, it is often behind the changes in education costs. As a result, local education funds provided to schools may, while being unchanged, become unable to cover the financial requirements of schools. Moreover, the persistent disparities in property tax bases among local regions often trigger unequal educational funding per student. Local property tax, thus, is suggested to be replaced by another measure that can promise higher equality (Kraft & Furlong, 2015).

Another point to consider is that when implementing foundation programs, states have been challenged in court for violating the equal protection provisions in state constitutions. The fundamental principle to generate equal spending among school districts, hence equal treatment in education among students, is based on local governments' income, not of local families. As a result, students, individually, are not equally protected. In order to reduce this effect, the states are required to lessen the connection between local property tax and per-pupil expenditure (Fisher, 2007).

One alternative is to increase the basic grant amount in the foundation funding formula to reduce the revenue-raising behavior of local governments. At the same time, local governments need to comply with a constraint on maximum education spending or funding, especially in high-income school districts. Nevertheless, this policy might reduce the overall spending level of the education system and induce high-income

families to increase spending on education services by other providers (private providers or school–parent associations). High-income districts also might try to find non-tax revenues to maintain their former services, while low-income districts may divert the increasing education fund to other purposes such as capital projects (Fisher, 2007). Therefore, this alternative policy could cause further inequality in education in the long term.

Approach Updates

Education Equity and Beyond. The concept of education equity has changed over time. Initially, fairness in education first meant equal access for all children to schooling, reflected through the number of enrollment and respective financial capacity of school districts. More recently, it implied the similar spending per student in education among districts (Brimley et al., 2016). Today, education equalization has been attached to the notion of adequacy. This emphasizes the sufficiency of education funding for all children to have an equal opportunity to reach the state's education requirements. In other words, a state's education finance needs to ensure all students can obtain an equal chance to become competent and competitive in society (Brimley et al., 2016; Verstegen, 2011). As a result, the current approach to education equity has broadened the focus of the foundation mechanism in two ways. First, the outcomes and achievements of students are incorporated into the program agenda. In addition, the program design needs to reckon with an equal amount of spending per student for all children and also sufficient support for students with special needs. Students with special needs should be provided with enough support to have the same opportunities to reach the state's standard. Surveys by Verstegen (2011, 2014) showed that states adjusted their grant formula so basic

foundation levels could better reflect the costs needed to reach their requirements. Additionally, many states have added items related to school capital outlay, debt services, or public school transportation. States have also integrated additional costs into the foundation aid formula for special education students, low-income students, and English language learners.

Financial Resources and Education Outcomes. Baker (2016) reviews the literature on education spending and performance and affirms that money positively affects education outcomes. Although the magnitude of the effect may vary according to school districts or student groups, in general, higher financial resources enable schools and districts to provide better education quality and opportunities for children. The research also shows that the way that money is spent has consequences on student performance. Larger investment in school resources such as class size reduction or teacher salary can increase student achievement while inefficient use of financial resources can limit the impact of resources on education quality (Baker, 2016).

Likewise, an analysis of education production function research over 35 years highlights the significant roles of school funding and its use in improving student performance. It asserts that different resource inputs, including "teacher characteristics, policy and administrative arrangements, and facility and fiscal characteristics," can produce varied influences on education outcomes (Verstegen & King, 1998, p.249). In his 1996 book, Burtless gathered contemporary studies on the impact of school resources and presented a similar viewpoint. Additional financial resources were not always likely to lead to enhanced student outcomes and adult earnings. To secure a positive relationship between financial resources and student achievement that leads to increased

future income, school finance should be considered along with changes in school administration (Burtless, 1996).

Meanwhile, Jefferson (2005) acknowledges the association between education spending and student outcomes. The author, however, emphasizes the necessity of efficiency in resource utilization to make that association a causal correlation. Consequently, he claims that a positive causal relationship between school funding and education opportunities presents a more valid statement. Fisher (2007) showed a lack of systematic relationship between per student spending and education outcomes. He revealed three main factors that might affect student performance: the method used to determine input elements, skills of teachers, and school curriculum. Among them, teacher salary mechanisms play a vital role in improving student outcomes and present an important implication for school expenditure strategies (Fisher, 2007). Brimley et al. (2016) contended that fairness in education financial support does not necessarily lead to equal learning in the context of equalization financing. Other influential factors might be student motivation, teacher quality, school climate, and instructional strategies.

In summary, there are several concerns about the effectiveness of foundation programs. Although the targeted beneficiaries of equalization policies are students, the policy measures are aimed at school districts. The impact of foundation programs depends on the way states build their funding formula, the property tax policy in states, and the willingness of school districts to raise their taxes beyond the foundation basic rates. Additionally, the evolution of foundation programs now requires evaluators to adopt a new, more comprehensive approach to evaluate foundation programs regarding multiple dimensions, including equity, efficiency, and adequacy. Last, educational

investment strategies of states and local districts, i.e., how states and school districts dictate key educational input factors, influence the casual relationships between financial resources and education outcomes.

The Foundation Program in Florida

According to the reports from Florida School Board Associations (2017, 2018) and Florida Department of Education (2018a), the state issues an updated grant mechanism every year. Grant information includes a required amount for each locality's contribution, a required millage rate of property tax each school district needs to levy, and a detailed formula. The grant formula, however, is complicated in practice. It typically has 12 components (Appendix 1); however, one or two components might be added or removed each year (e.g., it had 14 components in 2018–2019). Every year, there are five calculation phases for grant adjustment before reaching the final appropriation. The FEFP formula can be written as follows:

$$FEFP\ grant = (Base\ Funding + Adjustment\ Funding) - Required\ Local\ Effort \quad (3)$$

The *Base Funding* represents the foundation level, or the expenditure needs the state determines every year. It is calculated by the following equation:

$$Base\ Funding = FTE\ Students * Program\ Cost\ Factors * Base\ Student\ Allocation * District\ Cost\ Differential \quad (4)$$

The number of *FTE students* is the total student enrollment with the adequate hours of instruction required for each grade. *Program Cost Factors* are cost indices that can be adjusted for the expenditure to the different education programs by grade and student group (exceptional students, English classes, career education). Additionally, other elements may be considered for the cost adjustment, such as demographic characteristics

(small districts, isolated high schools) and performance (additional funding for students with high achievement in Advanced Placement classes or districts with high graduation rates). The *Base Student Allocation* is an absolute value set by the state annually. The dollar value of 1 year is decided based on the amount of the year before, the inflation rate, and program needs. In practice, however, this number is often determined last and subject to the state's available funding rather than actual costs. *District Cost Differentials* are calculated based on the Florida Price Level Index. This index presents an adjustment for differences in living costs across school districts.

Adjustment Funding indicates many different spending categories that can be divided into two groups. One is for the general population, and the other is for particular groups. The general population funds often invest in safe schools, reading programs, instructional materials, classroom supply assistance, virtual education, and digital classrooms. The special group funds usually relate to the Juvenile Justice Education Program, declining enrollment, sparsity, lab schools, the state average standard supplement, the academic instruction supplement, exceptional students, student transportation, federally owned military installations, and National Aeronautics and Space Administration property and Native American lands. In addition, a few categorical aid consist of features of both groups: the same lump-sum amount for all districts plus customized grants based on a district's characteristics.

In short, the basic education level of Florida is adjusted for demographic and economic differences across school districts. The grant formula can be altered if certain factors may raise costs, such as the number of students with special needs, remote regions, high density, or high cost of living areas. At the same time, the Florida grant

seems to integrate performance incentives into its formula when providing supplements for high-achieving students. Furthermore, many different adjustment funds contribute to the total foundation level. Some of them are for the general improvement of the whole system, while the others target specific student groups. The cost adjustments to the basic costs and the incorporation of specific group categorical funding reflect the state's efforts to enhance equal spending per student and adequate expenditure for equal education opportunities for students with special needs. By incorporating performance incentives and supporting all school districts equally through the general population funding, FEFP is likely trying to promote better education quality throughout the state, hence a higher level of funding adequacy and education efficiency.

Regarding local *revenue-raising capacity*, Florida first identifies the average *required local effort* of the state. Subsequently, it sets a required amount of local effort for each district. The *certified millage rate* that each district has to levy equals the quotient of the required local effort divided by 96% of taxable values for the district's education. The state alters the average required local efforts (which then leads to additional changes in the required millage) by an equalization factor to account for the variations in property valuation across districts. In case the local effort is higher than 90% of a district's total FEFP entitlement, there is an adjustment to reduce the local contribution.

*Required Local Effort = Certified millage tax rate * Property tax base* (5)

Florida's regulations limit the tax rates that school districts can raise above the required millage in the foundation grant formula. This maximum discretionary amount is contingent on the school's purposes for the tax revenues. One funding adjustment added

to the component of expenditure needs is called *Discretionary Compression.* It supplements districts failing to reach the state average level after levying the maximum millage rates. Therefore, it appears that Florida has tried to control the potential unequalized revenues caused by discretion in school districts' taxation.

Grants Management by Local School districts

Financial Decision-Making by Local School Districts

According to Roza (2013), although school districts make final decisions on spending education funds, they complete their responsibility in a "tangled web of forces." The author described this situation as:

> The result is that school boards operate amid a confluence of multilayered forces that are imposed from above (with federal and state layers), as well as from within the system (by labor, parent, and community groups), and actively shape the allocation of resources (Roza, 2013, p.37).

Federal and state governments affect education spending decisions through requirements or provisions attached to their grants transferred to local school districts. The allocation of federal funding often involves states' supplemental administration. At the state level, stakeholders relating to education governance are legislatures, governors' offices, and education agencies, representing different influential layers of states. Besides grant restrictions, states can also issue general regulations on schooling and recruiting, which can consequently affect local spending decisions. Moreover, school districts face challenges in managing their budgets. Based on their collected aggregate revenues, they build single spending plans associated with the local needs. However, with the revenues coming from many different sources and programs, they need to ensure that each funded

resource is used toward its intended purposes and in compliance with the required provisions (Roza, 2013).

Regarding the "within the system" factors in Roza's statement, one important constraint for local leaders that she pointed out was long-term contracts with labor groups. These employment arrangements prevent districts from making changes in service delivery and relevant financial terms due to their multiyear nature and the interconnection among varied employment contracts in the system. Other influential factors are parents, the community, and district officials. They can interfere in budget planning and budget cut decisions in formal or informal ways (Roza, 2013). It should be noted that interest groups play important roles in the general governance of local school districts. Research showed that despite the nonpartisan school board elections, it was impossible to separate local education governance from political pressure. The politics on school boards is not the politics of the two-party system but another kind, the politics of interest groups (Chubb, 2001; Iannacconne & Lutz, 1970). The most potent groups influencing school boards' management are teachers' unions as they are organized groups with a large number of members and abundant resources. Most importantly, they are motivated by the goal of improving teachers' livelihoods, which is an enduring concern of all their members. Other groups pursuing specific interests, such as special education, bilingual education, or gay rights, can also heavily affect school boards' elections and operations. Parents can also become a force to change education policies relating to their children, although they seldomly do so. In the context of low turnout and participation in school board elections, the involvement of these interest groups presents significant factors in school districts' governance (Chubb, 2001).

Likewise, Monk et al. (1997) argued that elements that could restrict local discretion in education expenditure decisions were requirements from federal and state programs, local administrative context (e.g., negotiated contracts with teachers), and local political processes. The spending pattern nationwide, however, seems similar. In general, local districts spend 63% of their budget on instruction, 19% on operations (transportation, food services, building maintenance), 7% on student services, and 11% on administration. When school districts have more unrestricted dollars, they tend to invest in improving facilities and reducing class sizes (Monk et al., 1997).

Grants and Local Autonomy

Investigating the influences of state and federal funding on the autonomy of local school districts, Shelly (2011) presented some noteworthy findings. First, he highlighted that the associations between state grants and local control,[2] federal grants and state control, as well as federal grants and local control, seemed similar (Shelly, 2011). In other words, although the roles of federal and state governments in education administration are different, the effects of their funding on local education autonomy are likely to follow one model of the relationship between granting and receiving governments. The book also stated that the correlation between money from higher-level governments and federal/state control of local policy, i.e., the decline in local autonomy, appeared not to conform to a linear trend. Larger education grants do not always mean more compromised local policies. Instead, the relationship can be described as a curve.

[2] Shelly used this definition of local autonomy or local control: "the general right of local governments to initiate policies that they deem appropriate and to be protected from outside interference in a sphere of activity reserved solely to them… Some, too, equate local autonomy with local power, by which is meant the ability of local officials to make meaningful decisions." (Shelly, 2011, p. 21)

Starting from zero, an increase in higher-level governments' funding share of total local education spending can result in a high gain of their control of local policy. However, when the financial contribution exceeds a certain level, the higher-level governments experience little or no gain of control. The empirical evidence showed that the threshold of funding share is likely to be less than 10% (Shelly, 2011).

Shelly found that the proportion of federal grants was small and lower than this threshold. Federal programs, however, can have massive compliance from local school districts. The main reasons for the strong control of the federal government are (1) limited budgets of local school districts, (2) the pressure from the public on local decision-makers to accept any additional dollars to develop local education for their children, and (3) the willingness of local officials to take advantage of opportunities to implement potentially helpful programs (Shelly, 2011). At the same time, Shelly argued that the contribution of state grants to total local education funding was likely to be in the range of 20%–90%, which was much higher than the funding level that could make local school districts implement almost all required policies. Therefore, when states increase their fund within this range, for example, for the equity goal, they seemingly do not wield any further influences on the autonomy of local school districts (Shelly, 2011).

Grant Fungibility

Regarding local discretion in grant utilization, previous studies have confirmed widespread occurrences of grant fungibility across different grant types. A report by the General Accounting Office (GAO) in 1996 pointed out that grant fungibility occurs when state governments use federal aid to curtail their expenditure on the funded areas. Federal transfers are rarely utilized wholly to support the targeted activities but are often partly

used to substitute for other priorities of states or lower taxes. Due to this replacement, the impact of federal grants has become less than expected. Importantly, this substitution effect does not only occur with federal–state transfers. In all cases of grants transferred to individuals or institutions, the recipients often tend to utilize the additional income as they wish (GAO, 1996). McGuire (1973, 1978) contended that local decisions are influenced by a complicated bureaucratic organization system that often has many concerns about expanding organizations' sizes and budgets. He argued that the effects of federal transfers are the results of interaction between local decisions on maximizing local welfare and bureau size and the conditions and characteristics of federal grants. He also highlighted that the grantors' administrative conditions often do not lead to expected expenditure at the local level. McGuire showed that local governments could find a way to turn federal transfers into fungible resources. Likewise, a review of studies in the 1970s by the Advisory Commission on Intergovernmental Relations (ACIR) showed that although substitutive effects in categorical grants might be less than in block grants and general revenue sharing, generally, the spending substitution occurs in all types of grants. This fungibility is more likely to exist when the recipient governments can access multiple fiscal transfers, have plenty of diverse income resources and provide a large number of public services. The magnitude of grant fungibility depends on a number of factors:

> The principal factor is recipients' taste for the aided activity in preference to other competing uses of funds. Other factors are the size and servicing range of the recipient government, the number and variety of grant programs…the timing and

size of the grant...the type of grant, and the grant's fiscal requirements. (ACIR, 1978, p.41)

In addition, grant fungibility might depend on the administrative space between the grantors and the recipients. Administrative supervision is often more relaxed when two administration levels are more detached. Thus, transfers from federal governments to local ones tend to result in higher substitution levels than when they originate from the state level (Gamkhar & Shah, 2007).

The extent of fungibility of transfers from higher-level governments is relatively large. GAO (1996) summarized that the increase in funded activities is only about 40 cents per federal grant dollar. Thus, on average, states use around 60% of received grants as their preferences. The rate of fungibility in education seems higher. Gamkhar and Shah (2007) found that in the 1960s and 1970s, this rate in educational grants from federal to local governments was over 70%, while the substitution in the non-educational grants was over 60%. From the federal government to the state, one dollar of aid for education can increase 20 to 90 cents of expenditures in supported areas (Fisher & Papke, 2000).

Grant Programs Interaction

Kimbrough and Hill (1981) examined possible adverse effects when school districts implement multiple state and federal education programs simultaneously. They focused on two phenomena: "interference" and "cross-subsidy." "Interference" means that operations of state and federal programs prevent local programs from delivering services as intended, i.e., conflicts between granted programs and local programs. "Cross-subsidy" refers to a shift in which funded resources initially targeted to one group are used for another group. The authors found that these phenomena were prevalent in the

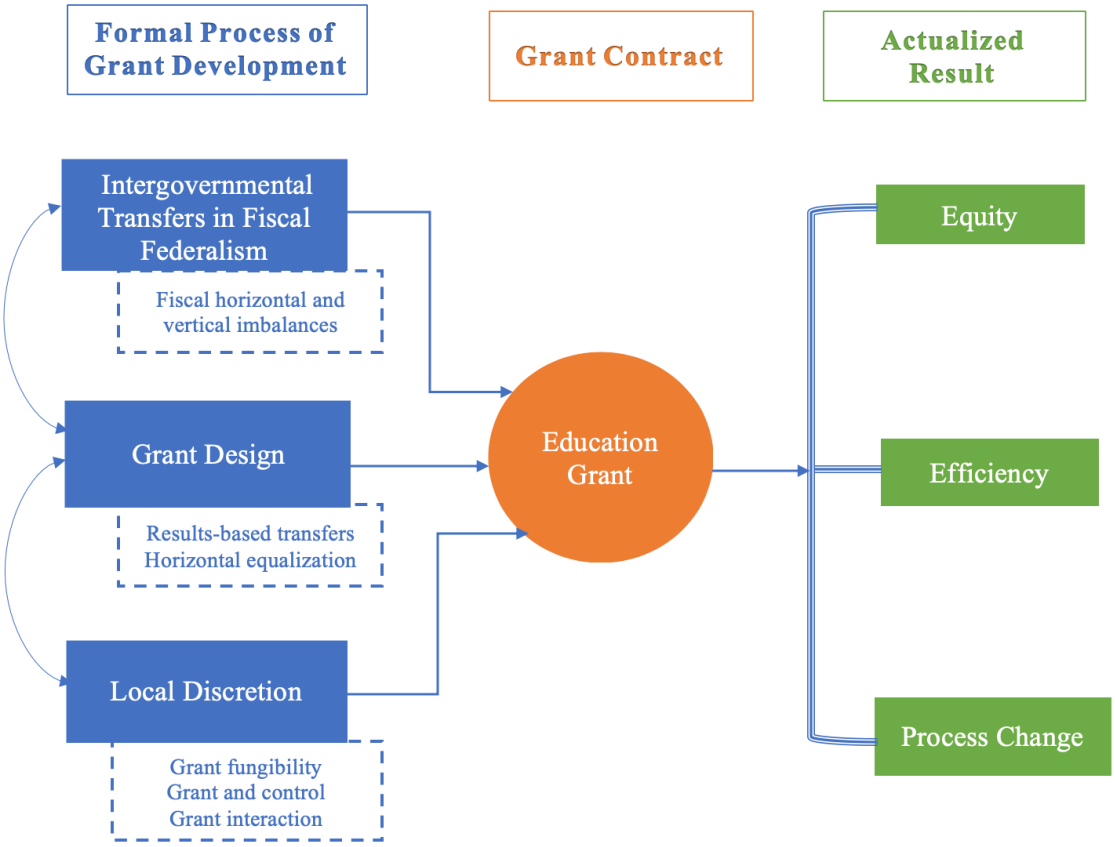
studied school districts. While pointing out that both the structure of funded programs and local decisions in program management caused the negative impact, especially in the case of unfunded mandates, the report emphasized the importance of improving both factors to reduce the problems. There are scant studies on the dynamics of this interaction in state–local transfers in the context of having additional funds from the federal government. While it seems that the fungibility of grant aid is inevitable as discussed above, this research is expected to broaden the understanding of this issue by investigating the mutual effects of the two concurrent transfers from federal and state governments.

CHAPTER 3. RESEARCH DESIGN AND DATA

Theoretical Framework

The schematic below demonstrates the major theoretical foundation of this research. Overall, the dissertation answers the research question by applying knowledge relating to the three main themes: objectives of transfer policies in the context of fiscal decentralization, the specific design of each type of grant, and the management of direct providers of education services—school districts. In the schematic, these three themes are presented as the three categories under the section *Formal process of grant development*. The section *Grant Contract* and the embedded category *education grant* in the circle show intergovernmental transfer programs in operational status within the context of mutual effects of the three elements in the *Formal process of grant development*. Consequently, the materialization of education transfers leads to *Actualized Result* in terms of *Equity* (vertical and horizontal), *Efficiency,* and *Process Change* in the education service delivery process (Figure 2).

Figure 2. Theoretical Framework



In addition to the general framework, this study employs two supplemental theoretical approaches to assess the FEFP. The first is the goal-free evaluation model introduced by Vedung (2005) in the book *Public Policy and Program Evaluation*. This model focuses on the results of government interventions, as opposed to procedural qualities. This substantive approach includes three main types of models with different concentrations: (1) effectiveness (results of the intervention), (2) economics (costs of policy), and (3) professional (subject matters). The goal-free evaluation model belongs to the group of effectiveness models. Goal-free evaluation means the assessment

concentrates on the program's results, both intended and unintended. That is to say; the evaluator can investigate any impact that the intervention might produce. This model does not require differentiating between unplanned or planned impact. Program evaluators, therefore, can be better aware of the big picture of the assessed policy, be more open to the overall effect of the program, and be more motivated to find all possible effects. Vedung stated that a goal-free assessment displays only the facts. It shows all of what evaluators know about program results. The final judgment on the overall values of programs and conclusions for future intervention is left to decision-makers. While this approach might be considered analysis rather than evaluation, Vedung stated that the strong point is that this model can avoid problems of setting criteria in public policy evaluation.

There are several reasons that goal-free evaluation is relevant to assessing FEFP. First, no single solid indicator can reflect the program's primary objective of equal opportunities for students. Second, there are undetermined effects of inputs and intermediate factors in the delivery process of education services. At the same time, efficiency and adequacy are considered to accompany the equalization goals. If applying a goal-oriented evaluation, program assessment can miss the chance to learn about other effects besides equalization and the underlying reasons behind the results of this large, multiyear program. Third, FEFP is the most crucial resource Florida has used to support local education. It is stable funding that school districts can rely on for their annual planning, leading to a pervasive impact on the state's education system. An overall view of the total impact of FEFP, beyond equalization, can be relevant and helpful for any evaluation of the program.

Another evaluation framework for the FEFP program assessment is the results chain with application to education services (Figure 3). As with the above analyses, all relevant input factors in the service delivery process matter in the relationship between per student spending and student outcomes. Thus, this research uses the results chain model to investigate the potential relationship among different variables in the education system. The assessment focuses on three major categories: inputs, intermediate inputs, and outputs.

Figure 3. Results Chain with Application to Education Service

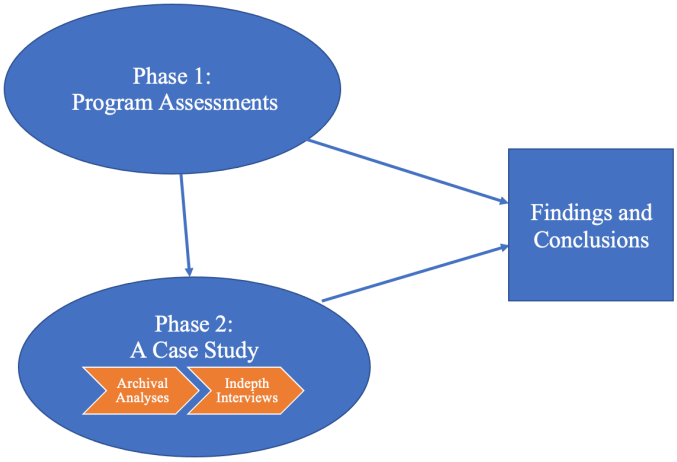
Program Objectives	→ Inputs	→ Intermediate	→ Outputs	→ Outcomes	→ Impact	→ Reach
Improve quantity, quality, and access to education services	Educational spending by age, sex, urban/rural; spending by grade level, teachers, staff, facilities, tools, books, regulations	Enrollments, student-teacher ratio, class size	Achievement scores, graduation rates, drop-out rates	Literacy rates, supply of skilled professionals	Informed citizenry, civic engagemen, enhanced international competitive-ness	Winners and losers from government programs

Source: Boadway & Shah (2009)

Research Methodology

The study is conducted in two sequential phases, and findings in Phase 1 will be fed into analyses in Phase 2. Details of the research plan are illustrated and described below (Figure 4).

Figure 4. Research Plan



Phase 1. Assessment of the Grant Programs

In this phase, the effectiveness and impact of each program are evaluated by using quantitative data from Florida's 67 school districts from years 2005 to 2016. Data were collected from the Florida Department of Education, the National Center for Education Statistics, and the US Census.

Race to the Top program. Question Q1: Did RttT improve student achievement?

Hypothesis H1: Based on the analyses in the theoretical framework, RttT improved student outcomes.

- (H1a) RttT has exerted a positive impact on student outcomes. The graduation rates and mathematics and reading test scores in Florida school districts have improved, after participating in RttT.

- (H1b) RttT has produced positive impacts on student outcomes. High school graduation rates in counties of Florida have improved with participation in RttT.

Data at the local level is used to examine the influence of RttT on student outcomes. The availability of cross-sectional, time-series data on student outcomes at the local level and their similar calculation standards during the research period facilitate the empirical analysis.

The study adopts difference-in-differences regression - a quasi-experimental design - to illustrate the RttT grants' impact on the educational outcome. Unlike other programs such as Florida Education Finance Program, the National School Lunch Program, and the No Child Left Behind program, RttT was not adopted by all the school districts in Florida, which provides an opportunity for a difference-in-differences comparison. The school districts that received RttT grants are regarded as the treatment group. The non-participating districts are the control groups. Besides the comparison within Florida, the study also extends the comparison with counties in the other two states, Texas and Alabama, which did not participate in RttT.

Because the time-invariant characteristics, such as education policies or demographics, might have correlations with the predictors, a fixed-effect transformation is applied to treat the panel data. Since it is difficult to dismiss the possibility of serial correlation in time-varying errors, the first-difference estimation is conducted to test the efficiency of the within estimators. Additionally, the study utilizes the Stata program's tools to generate dummy variables for the different years in the studied period in order to observe the changing effects of the DID estimators throughout the program period.

The variables and data used in the tests are explained in more detail below. The descriptive statistics of all variables are described in Appendix 3.

Comparison within Florida. According to the Summative Evaluation Results reported by Evergreen Solutions (2015), five out of the 67 districts in Florida did not sign the memorandum of understanding (MOU) with the state and did not receive RttT funds to implement the RttT district-level projects. These five districts, which are Palm Beach, Baker, Dixie, Hamilton, and Suwannee, constitute the control group for the test[3]. Because of the small number of school districts in the control group, a bootstrap estimate is executed, in addition to the fixed-effect regressions, to obtain another reference for the significant level of the DID tests. The bootstrap is computed for the standard errors of the coefficients of the fixed-effect estimation with 1000 replications.

The student outcomes are high school graduation rates and results for mathematics and reading tests under Florida's Statewide Assessment Program. While the high school graduation rate presents the final outcome for K-12 public schools in terms of preparing students for their future careers, the test scores can reflect the performances of students during the time they are in school.

The school year starting in 2010 will present the pre-treatment period. The first year of RttT in Florida was launched with this as its planning year. The program was in preparation mode and did not produce an impact on the education outcomes this year (ES, 2015; USDOE, 2013). Student achievements in 2010, then, reflect the most recent educational outcomes right before RttT went into effect. Additionally, due to the data

[3] Florida allocated half of the RttT grant fund to district-level projects and spent another half on state-level projects. These state-level projects supported the implementation of school districts that received the fund from RttT. However, some state-level projects can benefit all school districts in the state (including school districts did not receive the RttT fund) by carrying out activities relating to the whole state education system, for example, reforms on the state education standard and assessment. (ES, 2015). In this case, it is assumed that the effects of the state-level projects on all school districts within the state were the same.

availability, the test with graduation rates will consider 2005 another reference of the pre-treatment period. The post- treatment period in case of graduation rate comparison will comprise school years from 2011 to 2016. Meanwhile, in the DID comparison of test scores, it will be shortened to 2011-2013 because of the changes in standardized test administration in Florida.

In order to take the effects of other programs in Florida into account, the total expenditure per student (district expenditure per unweighted full-time equivalent-UFTE student) and FEFP spending per student (adjusted net FEFP spending per UFTE student) are included in the model as control variables. Because family background or socioeconomic status is identified as a determinant of school academic achievement (Sirin 2005; Wright and Bean 1974), median household incomes and the percentage of children from five to seventeen years old in poverty are included in the model. The differences in teaching quality among districts are controlled by adding two variables, which are teachers' years of experience and teachers' average salaries. Lastly, there are concerns about disparities in school services provided for white and non-white students. For example, Darling-Hammond (2007) shows that students of color are more likely to have unequal access to education resources such as high-quality curriculum and qualified teachers, resulting in their low education achievements. The DID regression controls for this socioeconomic factor by adding the variables of the total students and the proportion of white students.

The hypothesis of interest is:

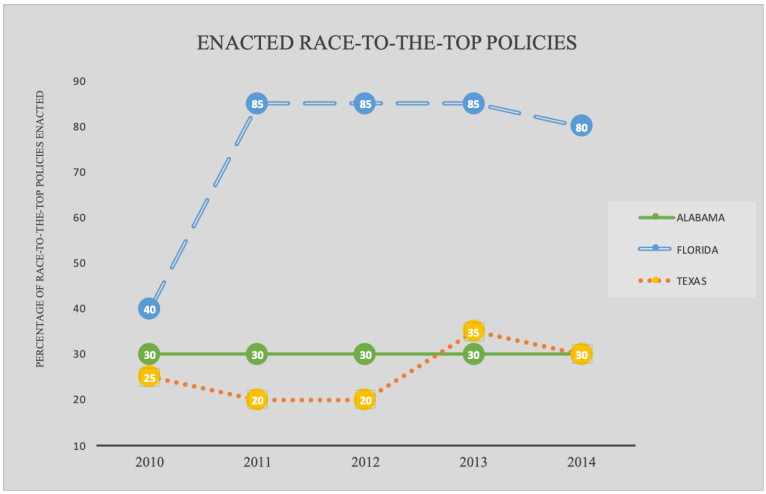
(H1a) RttT has exerted a positive impact on student outcomes. The graduation rates and mathematics and reading test scores in Florida school districts have improved, after participating in RttT.

Comparison with School Districts/Counties in the Other States. Regarding the different involvement of states in RttT, Howell and Magazinnik (2017) divided the fifty states into three groups of winning, losing, and non-applying states. They argued that RttT succeeded in reforming educational policies throughout the nation, not just in the winning states. On account of the uncertainty surrounding winning or receiving a grant, all states that applied for funding attempted to adopt more policy reforms to improve their chances of winning. In addition, the RttT competition stimulated a mechanism whereby states imitated the policies of one another. This spillover effect of RttT created a policy diffusion phenomenon around the country. The diffusion of policy reforms developed both vertically and horizontally because policies can be spread over states which have ideological, economic, demographic, and geographic similarities. As a result, policy reforms could be attained in all three groups of states. The impact of policy adoption, however, was the largest in the winning group and the smallest in non-applying states, according to a survey of state legislators (Howell and Magazinnik 2017).

Utilizing the divisions created by Howell and Magazinnik (2017), this study considers two states for the comparison: one is a non-applying state (Texas), and the other is a non-winning state (Alabama). Out of 50 states, only four states, Alaska, North Dakota, Texas, and Vermont, did not apply in any rounds of the RttT competition. The time series data of student outcomes can only be disclosed on the Texas Education

Agency's official website, however. Alabama, though not joining RttT, attempted to receive RttT funding by applying for the program in the first two rounds of the competition. The main reason Texas and Alabama were selected, though, stems from the percentage of reform policies they adopted during the period 2010-2014 (Figure 5).

Figure 5: Enacted Race-to-the-Top Policies



Source: Howell, William G. 2015. "Results of President Obama's Race to the Top." Education Next 15 (4): 58–66. https://www.educationnext.org/results-president-obama-race-to-the-top-reform/.

Howell (2015) reviewed all enacted education policies in the fifty states during 2001-2014 and recorded the number of policies that met RttT's standards in each state. The proportion of RttT policies enactment each year in all three groups of winning, losing, and not-applying states displayed increasing trends throughout the studied period. Among losing and not applying states, the proportion of RttT policies adopted by the end of the studied period in 2014 fluctuated from 30 to 70 percent (except for Nebraska at 15 percent). Texas and Alabama both stood at a low 30 percent in 2014 (Howell, 2015). This figure implies that the investigation can obtain the largest gaps between control and

treatment groups when comparing Florida with Texas and Alabama. It is expected that these maximized gaps can produce strong, explicit results for the regression.

Another issue is that Texas has over 1000 school districts located in over 200 counties. The number of school districts in Florida is much smaller than that in Texas and because Florida has county-wide school districts. For comparison, Texas counties instead of constituent school districts were chosen to be the units of analysis for a more balanced model. Meanwhile, Alabama statistical data on public schools is reported for their system of 67 county school districts and nearly 70 city school districts. Hence, school district-level data are used for comparison with Alabama. In both cases, the 67 districts/counties in Florida constitute the treatment group for the analysis.

The student outcomes selected for the comparison are graduation rates because student assessment is diverse among states. As the above explanation, the school year 2010-2011 is a planning year for the RttT grant implementation and was not likely to impact student outcomes in local education agencies. In addition, because all states started using federal four-year-cohort graduation rates in 2010, the graduation rates across states have been calculated using the same method since this year (National Center for Education Statistics, 2021; Florida Department of Education, 2018b). Thus, these DID tests regard 2010 as the reference year and school years during 2011 - 2016 as the post-treatment period.

Similar to the previous comparison within Florida, this model also controls for per pupil expenditure, total students, and the proportion of white students. Regarding poverty, the percentage of children from 5 to 17 years old in poverty is controlled in the comparison between Florida and Alabama. This information from the Census is provided

by school districts without any indication of respective counties, however. In the Texas-Florida's tests, the proportion of students in economic disadvantages is used instead as a proxy for the poverty circumstances of Texas and Florida counties.

According to the Texas Education Agency, data on Texas graduate rates are available by county while other control variables are reported by school districts. The statistics of the Texas education system, however, indicate the respective counties for each reported school district. Data of control variables for Texas are thus aggregated by county basing on this division of the state education system. The number of observed Texas counties is 252. There are five city school districts in Alabama that do not have information on graduation rates in 2010. These city school districts are dropped from the regressions. The number of Alabama school districts is 67 county school districts and 64 city school districts.

The hypothesis for this test is:

(H1b) RttT has produced positive impacts on student outcomes. High school graduation rates in counties of Florida have improved with participation in RttT.

Florida Education Finance Program. Question Q2: To what extent has FEFP achieved its objectives of improving the state education system?

Hypothesis H2: FEFP has contributed to improved equality in education spending. FEFP has positively affected education adequacy, efficiency, and input factors in the learning and teaching process (i.e., teacher salaries, teachers' years of experience, pupil-teacher ratio).

- H2 (a) Share of FEFP funding is correlated with school districts' total expenditure per student. School districts that rely more on FEFP funding may spend less per student.

- H2 (b) FEFP has helped promote educational achievement (increased graduation rates). In addition, FEFP has helped improve the students' education access (reduced dropout rates) and performance in school districts with a more significant proportion of students in poverty and students in need of special assistance (increased graduate rates of subgroups).

- H2 (c) FEFP can improve intermediate input factors of the education process (increased teacher's years of experience, teacher salary, and decreased pupil-teacher ratio). The improvement of the process factors, then, can increase student access and performance (reduced drop-out rates and increased graduate rates).

This research examines three groups of variables with respect to input, intermediate input, and output factors in the results chain with application to education service. Group 1 includes variables related to education spending, such as total and current expenditure per student, total revenue per student, FEFP funding per student, and share of FEFP funding in total local revenue. Variables reflecting the teaching and learning process are in Group 2, intermediate factors. They are pupil–teacher ratio, teachers' average years of experience, and average teacher salaries. Student achievement indicators (including graduation rates of the whole student body and by subgroup) and dropout rates are variables in Group 3, outputs. In addition, because the FEFP formula reckons with local financial capacities and different demographic characteristics of students in school districts, other variables were also incorporated in the examination as

indicators of subgroups of the school districts, such as revenue from local sources per student, percentage of students from low-income families, and percentage of students in language assistance and special programs.

If all targets reflected in the FEFP formula are successfully materialized, it will be possible to observe the contribution of FEFP to equal resource mobilization across school districts through variables of financial resources (Group 1) and teaching quality (Group 2). FEFP may also help promote educational achievement (i.e., increased graduation rates). In addition, FEFP may help improve the students' education access (i.e., spending level, investment in teachers, dropout rates) and performance in school districts with a more significant proportion of students in poverty and students in need of special assistance (subgroups). This study also examines the role of intermediate inputs (Group 2 variables) in the connection between the inputs (Group 1 variables) and outputs (Group 3 variables). That is to say, the contribution of FEFP to improved education access and outputs may be realized through their influence on teaching factors. The sources and descriptive statistics of variables are described in Appendix 4 and Appendix 5.

This research utilizes different analysis methods of choropleth maps, coefficient of variation, patterns of quintiles, and panel data regression. Choropleth maps and other descriptive statistics analyses are expected to generate snapshots of the changes in development patterns of different education factors and their correlation with the FEFP grants. The panel data regressions help examine the impact of FEFP on expenditure and education achievement as well as the mediation effects of intermediate inputs relating to teaching quality. The employment of a variety of variables and analytical methods facilitates the goal-free evaluation approach, and thus, the investigation was open to any

planned or unplanned impact of the program. Because the goals of equal spending per student and equal treatment of different student groups may conflict, analyzing multiple variables from a different perspective is helpful in balancing the evaluation of FEFP's success.

Through choropleth maps, the changes and the relationship of spending (total current expenditure and FEFP spending per student) with the proportion of people in poverty, graduation rates, and teacher salaries are observed for 3 years, 2005, 2010, and 2015. The grant pattern is expected to match the poverty level in each district and contribute to the current expenditure of school districts. Simultaneously, due to the vital roles of teacher quality and teacher salaries in improving the education system, this research looks for a link, if any, between the reliance of school districts on FEFP funding and the improvement of teacher salaries in those districts. Finally, this study seeks to determine whether the graduation rates of school districts might reflect the positive effects of grant aid and the investment in teacher salaries.

This study captures the disparities in financial resources, teaching processes, and education outcomes among school districts by utilizing the coefficient of variation for revenue and spending per student, pupil per teacher ratio, teacher salaries and experience, graduation rate, and dropout rate during 2005–2016. The coefficient of variation is often used in school finance analyses and measured by dividing the standard deviation by the mean. The equity gets better as the ratio becomes lower. Studied variables have exactly equal values across observations when the coefficient of variation is zero (Guthrie et al., 1988).

Additionally, this study explores the FEFP grant amount per student and other variables in the three groups in different quintiles. The school districts are divided based on the values of local revenue per student and the proportion of various student groups (students from low-income families, non-White students, enrollments in language assistance, and special programs). This study analyzes each of the 3 study years, 2005, 2010, and 2015. If FEFP is effective, school districts will not differ much in financial and human resource mobility and education outcomes and the program's target groups, including students in poverty and special conditions, would receive higher funding levels.

Last, the regression models examined the potential causal impacts of FEFP funding on expenditure per student, and education achievements.

The regression specification can be expressed as:

Total Expenditure per Students = f (FEFP Share, Poverty, Median Household Income, Total Students, Non-White Students, Local Revenues from Federal Sources)

Education Outcomes = f (FEFP per Student, Poverty, Median Household Income, Total Students, Non-White Students, Local Revenues from Federal Sources, Teaching Quality)

Education Outcomes can be graduation rates in general, graduation rates by subgroups, or dropout rates; *Teaching Quality* can include pupil per teacher ratio, teacher salaries, and experience. Because time-invariant factors, such as policies or demographics, may correlate with the predictors, this research applies fixed-effect estimation to analyze the panel data in 2005–2016. First-difference estimation is implemented as a robust test for the fixed-effect estimation due to possible serial correlations in time-varying errors.

Hypothesis for the regression on spending is:

- H2 (a) Share of FEFP funding is correlated with school districts' total expenditure per student. School districts that rely more on FEFP funding may spend less per student.

Hypothesis for the regression on education outcomes is:

- H2 (b) FEFP has helped promote educational achievement (increased graduation rates). In addition, FEFP has helped improve the students' education access (reduced dropout rates) and performance in school districts with a more significant proportion of students in poverty and students in need of special assistance (increased graduate rates of subgroups).

This study also investigates the possibility that intermediate inputs of the education process intervened in the relationship between funding sources and education outcomes. In other words, factors in the teaching process such as pupil per teacher ratio, teacher salaries, and experience may have mediated the influence of FEFP funding on education achievement. The mediation effects are analyzed based on the causal steps approach (Baron & Kenny, 1986). The first step investigates the total effects of FEFP funding on education achievement (without the variables in Group 2). Following that, the model analyzes the impact of FEFP funding on mediation variables. If there are statistically significant effects in the first two steps, a regression of education outputs on FEFP (with mediators) is conducted to identify the complete or partial mediation effects. Descriptive statistics of variables are provided in Appendix 4 and Appendix 5.

Hypothesis for the mediation is:

- H2 (c) FEFP can improve intermediate input factors of the education process (increased teacher's years of experience, teacher salary, and decreased pupil-teacher ratio). The improvement of the process factors, then, can increase student access and performance (reduced drop-out rates and increased graduate rates)

Interactive Effects of Grants on Local Expenditures. Question Q3: Was there an interactive effect of the federal and state-funded programs on school districts' budgetary allocations?

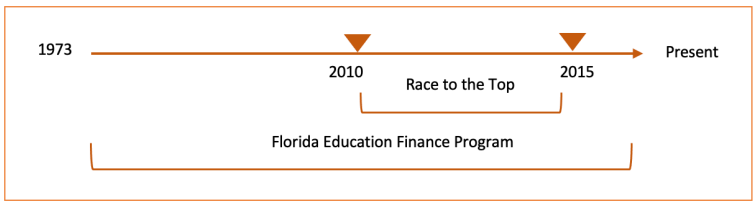
Hypothesis H3: RttT affected the connection between FEFP and spending categories at the local level.

- H3 (a) The availability of RttT funding affected the connection between FEFP and spending categories at the local level.

- H3 (b) RttT affected the connection between FEFP and spending categories at the local level, and the effects are subject to the size of the funding.

While FEFP is a long-term grant from the state to school districts in Florida, RttT was a short-term aid that school districts received from the federal government. According to the above analyses on grant fungibility and cross-subsidy, the interaction of the two transfers is expected to change the expenditure pattern of local agencies. In other words, the availability of the RttT's fund is considered a moderator to reduce or increase the connection between FEFP and different spending categories at the local level (Figure 6).

Figure 6. The Race to the Top and Florida Education Finance Program Timelines



A moderation analysis with data from 67 school districts in Florida is implemented to examine the expenditure tendency across school districts. The study utilizes fixed-effect transformation on years and school districts to treat the panel data. The study investigates the moderation effects of the RttT funding through two models. The first model integrates the DID estimation approach into the moderation analysis. The equation below describes Model 1:

*School Districts' Spending = FEFP + RttTtreat+ RttTtrend + (RttTtreat *FEFP) + (RttTtrend*FEFP) + Control* *(Model 1-1)*

School Districts' Spending is different spending categories of school districts, including instruction, instruction support services, general support services, community services, capital outlay, debt service, employee salaries, and employee benefits. This spending is measured by the proportion of total expenditures and dollars per student. *FEFP* indicates the share of FEFP funding in total local revenue.

RttTtreat and RttTtrend inform the differences between school districts that participated in RttT (the treatment group) and districts that did not (the control group). The value of *RttTtrend* equals 1 for school districts in the treatment group after the year 2009, and 0 otherwise. The coefficient of *RttTtreat* then presents an immediate decrease or increase (intercept shift) in the treatment districts' expenditures or *School Districts'*

Spending due to the federal funding. *RttTtrend* equals $(t\text{-}t_0)$ with *year* $t > t_0$ and t_0 denoting the year 2010, the first year after RttT began, for the treatment group, and 0 otherwise. The coefficient of *RttTtrend* then indicates a difference in the trend (slope change) of *School Districts' Spending* in the post-treatment period. In other words, the coefficient of *RttTtreat* shows an instant influence of the federal program in its first effective year. In contrast, the coefficient of *RttTtrend* informs its increment effects on the trends of expenditures in each year after that. *RttTtreat*FEFP* and *RttTtrend*FEFP* represent the interactive effects of the RttT funding on the relationship between FEFP funding and school districts' expenditures.

The regression model controls for factors that can affect the spending decisions at the local level, including the total number of students, the number of non-White students, the proportion of students in poverty, the percentage of students with disabilities and in English language programs, median household income and federal revenues per student. Data are collected from the Florida Department of Education and the US Census from the 2005–2006 school year to the 2015–2016 school year (All variables are described in Appendix 6).

Hypothesis for Model 1-1:

- H3 (a) The availability of RttT funding affected the connection between FEFP and spending categories at the local level.

A critical assumption that a DID estimation needs to satisfy is that the outcome variables of the two compared groups have a common (or parallel) trend in the period before the policy implementation. This study tests this assumption by adding the variable *Pretrend* in the model.

*School Districts' Spending = FEFP + RttTtreat+ RttTtrend + (RttTtreat *FEFP) + (RttTtrend*FEFP) + Control + Pretrend* *(Model 1-2)*

Pretrend equals $(t-t_0)$ for school districts in the treatment group and for all years. Thus, *Pretrend* is negative for the period before 2010, equals 0 in 2010, and is positive after 2010. The DID assumption is supported when the coefficient of *Pretrend* is insignificant because the trend of *School Districts' Spending* of the two compared groups before 2010 is not significantly different.

The second model analyzes the moderation effects of the size of RttT funding on the connection between the FEFP funding and school districts' expenditures.

*School Districts' Spending = FEFP + RttTsize + (FEFP * RttTsize)+ Control*

(Model 2)

Model 2 is applied to 62 school districts that received RttT funding. In this model, the *RttTsize* is measured in dollars per student while other variables (*School Districts' Spending*, *FEFP*, control variables) are the same as in Model 1. *FEFP*RttTsize* represents the studied moderation effects. Data of *RttTsize* are collected from school districts.

Hypothesis for Model 2:

- H3 (b) RttT affected the connection between FEFP and spending categories at the local level, and the effects are subject to the size of the funding.

Phase 2. Case Study

Question Q4: What is the impact of educational grants on education equity, expenditure decisions, and the performance of the selected school district?

Guiding hypothesis H4: The impact of educational grants on the studied school district can reflect the research outcomes of the first phase. Various local factors could influence the grants' impact, such as the fungibility of grants and local management capacity.

The Rationale. This phase is an exploratory study on the consequent influences of transfers on the districts' education system in association with school districts' responses to grants from higher-level governments. The research design of this stage is in line with the definition of a case study as an investigation of a "real-world case" that relates to the contextual conditions and might identify many variables and multiple sources of evidence (Yin, 2018). Utilizing a case study of a specific school district emphasizes the preceding discussion about the influences of local contexts and program implementation. This phase provides a better understanding of the first stage's results, hence contributing to the main question of the study.

The case study site selected is the Miami-Dade school district. Regarding the influences of RttT, the financial management and performance of Miami-Dade school districts are compared with school districts that did not participate in RttT. The selected comparison school districts include school districts in Florida and Texas.

Conducting the Case Study. The case study is implemented in two steps. The first step aims to answer the research question through analyses of archival materials. Subsequently, the study searches for further evidence from an online survey and in-depth interviews with school district officials. The survey and interview questions are developed based on outcomes of the archival analysis as well as the results of the statewide program assessment. The survey is carried out online through the Qualtrics

software. Due to the COVID-19 pandemic, interviews are conducted virtually or via phone. The in-depth interviews are noted. A consolidated report summarizing the main findings of the research is shared with the interviewees.

In the first step, analyses focus on evidence from statistical data provided by the selected school districts, the National Center for Education Statistics, and the US Census. The results of the statewide evaluation of the two programs contribute to a foundation for data collection at this stage. The research applies time-series and descriptive analyses. The studied period is 2005–2015, including the duration before and after the implementation of RttT.

The paper assesses the impact of the grant programs on education outcomes and expenditures in the Miami-Dade school district. First, the education achievement in Miami-Dade is expected to be consistent with the results of the statewide evaluation of the two programs. That is to say, RttT overall did not increase the performance of Miami-Dade students. At the same time, the FEFP program did not help improve student achievement or the access for and achievement of students with special needs in Miami-Dade. Exploratory time-series analyses of Miami-Dade graduation rates and test scores are conducted to test these hypotheses. In addition, an interrupted time-series regression is carried out to compare graduation rates before and after 2010, the year RttT started.

The student performance in Miami-Dade is also compared with the Palm Beach school district in Florida. Palm Beach is one of the five school districts that did not participate in RttT. Among the five non-participating local agencies, Palm Beach is the most comparable with Miami-Dade in enrollment, current expenditure per student, revenue sources from state and federal governments, number of students in economically

disadvantaged situations, students with disabilities, and non-White students. In addition, the graduation rates and test scores in the Miami-Dade County/school district are analyzed compared to Houston and Austin counties/school districts in Texas, which did not apply for the RttT fund. Like Miami-Dade, Houston and Austin are selected school districts in the Trial Urban District Assessment (TUDA) by the National Center for Education Statistics (NCES). Last, graduation rates by subgroup and dropout rates are examined to evaluate the impact of the FEFP program in Miami-Dade.

To observe the moderation effects of RttT on the relationship between FEFP funding and spending in the Miami-Dade school district, spending items in Miami-Dade and Palm Beach school districts are illustrated for the period 2005–2015. The spending categories of Miami-Dade and Palm Beach include all items in the investigation in Chapter 6.

The second step involves conducting a brief online survey with managing staff in the Miami-Dade school district and obtaining information from two to five semi-structured interviews with officials in the Miami-Dade school district and Florida state. According to the Office of the Superintendent of Miami-Dade County website, the district's superintendent is assisted by assistant superintendents, regional superintendents, chief officers, and senior officers. These positions are assigned by issues such as equity and diversity, human capital, operating, security, compliance, academics and transformation, finance, grant administration, and intergovernmental affairs. The targeted survey respondents and interviewees are officials responsible for evaluating, managing, and implementing grant programs. Thus, they can be assistant superintendents, chief officers, or staff working on the issues of financial management, academic

administration, and intergovernmental affairs. Likewise, this study seeks feedback from state officials in departments in charge of grant management, financial administration, and accountability. A summary of the initial findings of the previous research phases is provided to the survey respondents and interviewees for their information before their participation in the research.

CHAPTER 4. RACE TO THE TOP PROGRAM IN FLORIDA

Results

Descriptive Analysis

The graphs shown below illustrate the average values for the student achievement measures for the control and treatment groups during the studied period. First, in Florida, the average graduation rate of the school districts, which implemented their own RttT projects, experienced a gradual increase throughout the studied period (Figure 7). In the meantime, the control group, the non-RttT districts, had a lower average graduation rate with a similar increasing trend from 2005 to 2012. This average rate, however, soared and surpassed the average rate of the RttT group in 2013, then continued rising.

Regarding statewide assessment, the test administration in reading and mathematics assessment in Florida has experienced two major transitions in recent years. Before 2010, the reading and mathematics tests were administered as the Florida Comprehensive Assessment Test (FCAT). In the school year 2010-2011, these tests were changed to Florida Comprehensive Assessment Test 2.0 (FCAT 2.0). Since 2014-2015, these tests have been measured under the Florida Standard Assessments (FSA) framework. The graphs display results of test scores for both the control and treatment groups for different grades with distinct computation of FCAT and FCAT 2.0. The results are the average percentages of students achieving level three or higher on the reading and mathematics tests during 2003-2013. The test scores in the transitory school year 2010-2011 were available in both FCAT and FCAT 2.0 measurements (Figure 8 and Figure 9).

Before 2010, in general, the test scores for both groups rose over time. After 2010, in most cases, the trends between the two groups differed. The treatment group's

reading scores for grades five, six, and nine seemed constant while the control group's scores showed a fluctuation. In contrast, the control group's reading scores for grades four and eight looked stable while the treatment group's scores fluctuated. In the reading tests for Grade 7, the treatment group experienced a decline, while the control group's result slightly increased. Likewise, the treatment group's mathematics scores for grades three and six were more stable than those of the control group. In the mathematics test for grade eight, both groups had lower results over time. However, the treatment group demonstrated a sharper decrease. Generally, the proportions of students with good performances in RttT districts were higher than those in non-RttT districts, but in all years, not just after RttT intervention. There were three cases in which the control group's results reached higher levels than the treatment group's after the treatment (mathematics tests for Grade 3, Grade 4, and Grade 6). The best parallel trends between the two groups before 2010 was shown for reading tests for Grade 5 and Grade 9, and mathematics tests for Grade 5 and Grade 7. The DID comparisons then are carried out for these tests.

During 2010-2015, the average graduation rate of counties in Florida increased steadily while the rate in Texas stabilized at around the high level of 92% (Figure 10). Meanwhile, the average rate of school districts in Alabama increased sharply from 2011 to 2014 then leveled off at about 90%, a substantially higher level than the 2010 rate (77%) (Figure 11).

Overall, patterns of the dependent variables' patterns do not support the hypotheses that RttT has resulted in discernible improvements in student outcomes compared to the control groups. The observed trends are even likely to be contradictory

in cases of graduation rates and some mathematics tests in Florida, as well as graduation rates of school districts in Alabama.

Figure 7: Graduation Rates of Florida School Districts

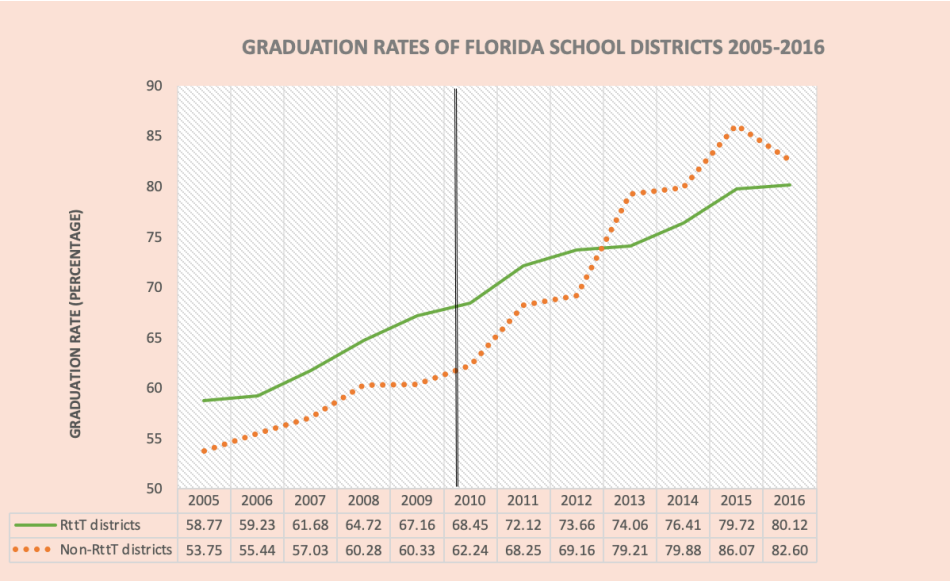
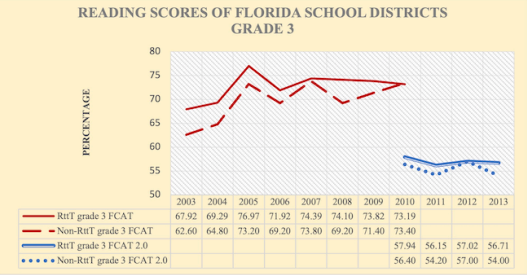
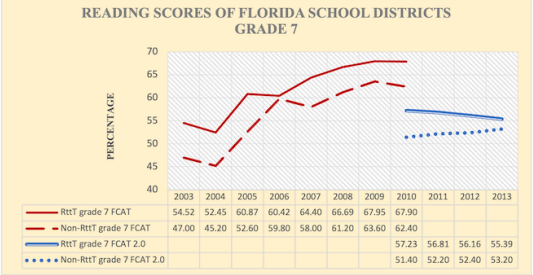
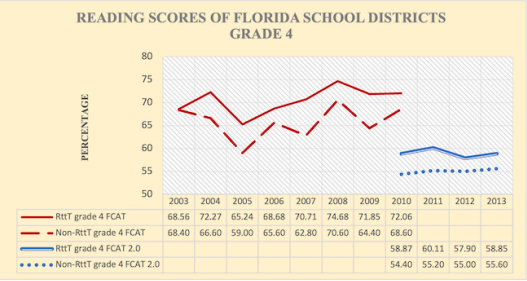
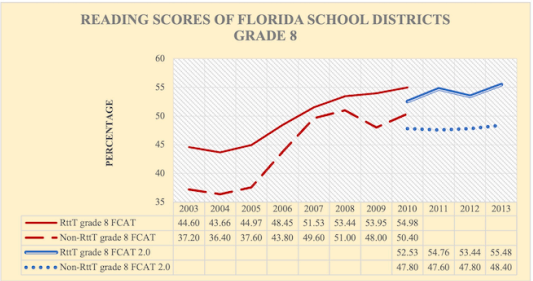


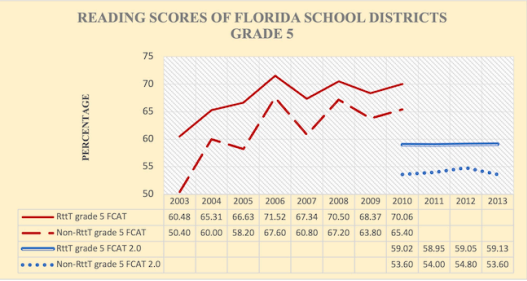
Figure 8: Reading Scores of Florida School Districts

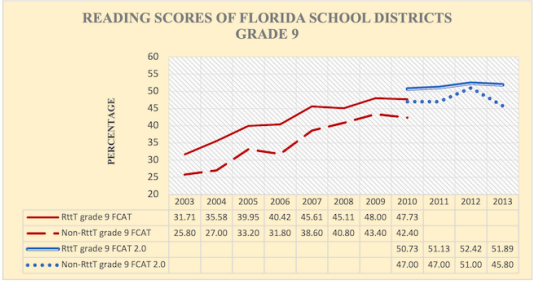


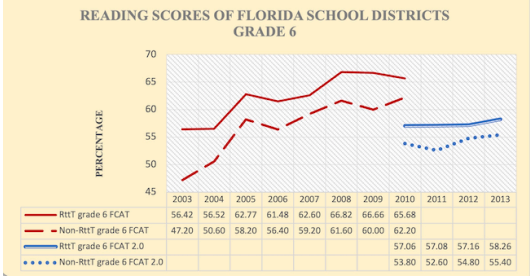












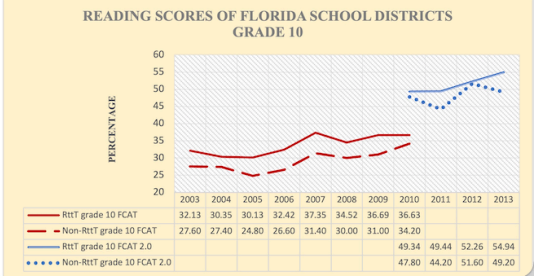
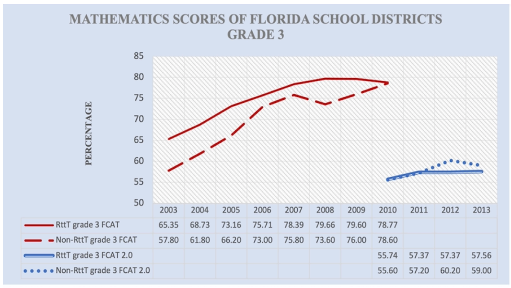
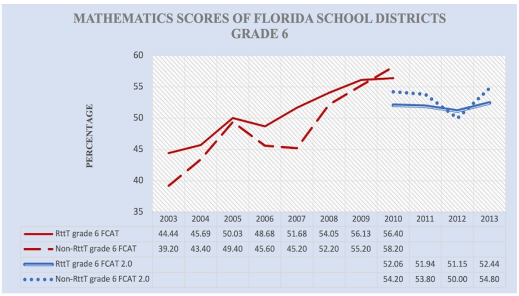
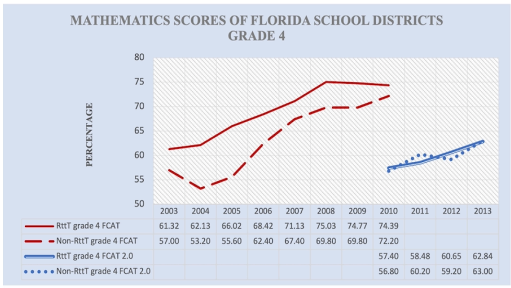
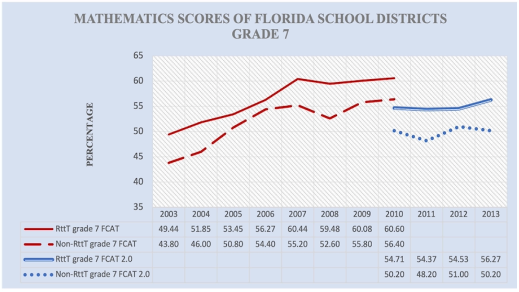


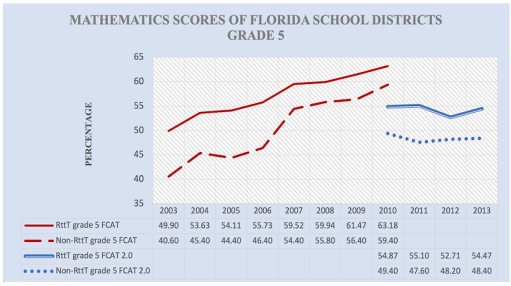
Figure 9: Mathematics Scores of Florida School Districts











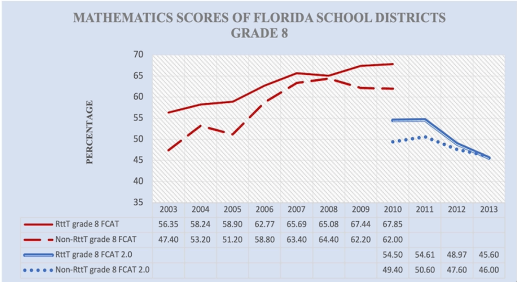


Figure 10: Average Graduation Rates of Counties in Florida and Texas

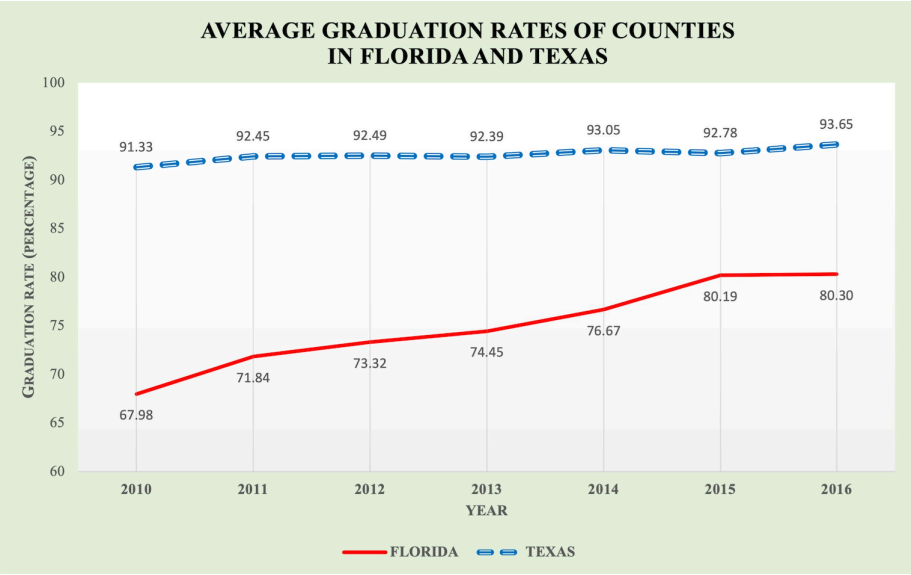
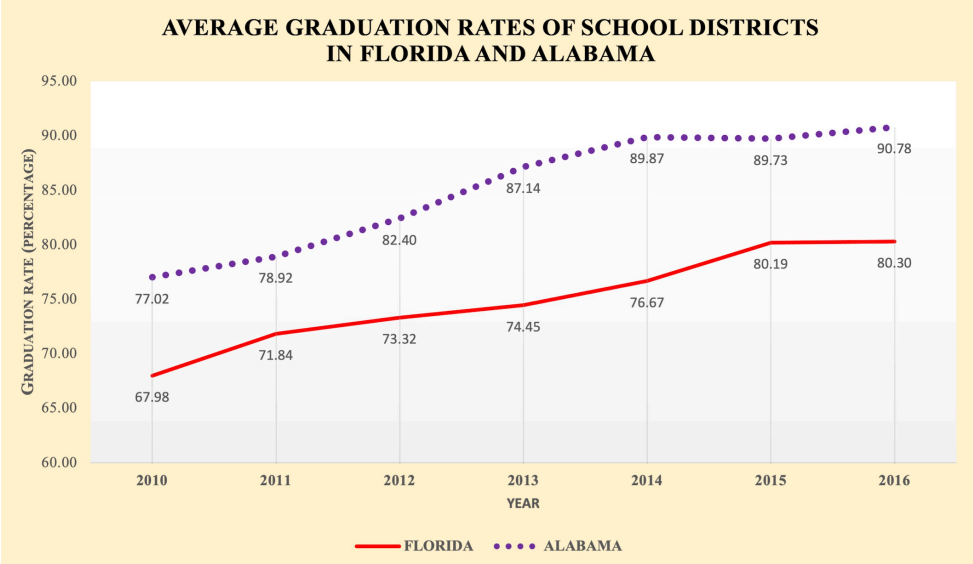


Figure 11: Average Graduation Rates of Counties in Florida and Alabama



Comparison within Florida

The results are similar for graduation rates in both periods 2005-2016 and 2010-2016. Throughout the years after RttT was launched, the DID estimators of graduation rates are negative (Table 1). For 2011 and 2012, they are small and not statistically significant. For 2013 and the years after, the interaction terms increase drastically in size and become negatively significant. That is to say, after the first two years of RttT implementation, the trend in the graduation rates is likely to start deviating more inversely from the trend expected in the case of no RttT program. The largest deviation is for 2015. On average, RttT seemed to reduce the student outcomes in RttT districts by around seven percentage points compared to the success rate that the districts might have had if there had not been an RttT program. The first- difference estimation produces nearly the same results with the within the transformation. For the years 2014 (2010 comparison) and 2016 (both cases), first-differenced estimators even fail to recognize the program's effects by showing insignificant interaction terms.

The interaction terms in the models for the test scores in both reading and mathematics are not statistically significant (Table 2). The DID estimators of the average test results, thus, are insignificant. The first difference estimation is consistent with the within estimation when showing an insignificant coefficient in every case. These results dismiss a pattern of deviation of the test scores from the expected values in case of no RttT intervention. In other words, there is no confirmation of a trend in discrepancies between student reading and mathematics test results of participating and non-participating districts in Florida after RttT implementation.

Compared to the results of those fixed-effect regression models, the bootstrap estimate shows higher standard errors and broader ranges of confidence intervals of the interaction terms in all tests (Table 3). The bootstrapping displays closely similar conclusions on the significance of the DID estimators on graduation rates during 2005-2016 and reading and mathematics scores. The bootstrap estimate, however, provides no significant coefficients in all cases of the test on graduation rates during 2010-2016.

Overall, the hypothesis H1a is not supported. Graduation rates and results of reading and mathematics assessments in Florida school districts participating in RttT are unlikely to have improved. They might have even decreased or had no trend. Therefore, the study can not verify the positive impacts of RttT on student outcomes.

Table 1. Intrastate Comparison – Graduation Rates

	Period 2005-2016			Period 2010-2016		
	Fixed Effects	First Differencing	Average Estimation	Fixed Effects	First Differencing	Average Estimation
RttT Average			-6.982***			-7.945***
RttT 11	-.884	-1.958		-1.969	-1.945	
RttT 12	-1.087	-1.944		-2.362	-1.888	
RttT 13	-10.900***	-11.569**		-11.601***	-11.084**	
RttT 14	-9.034***	-9.727*		-9.868***	-9.393	
RttT 15	-12.146***	-13.006**		-13.132***	-12.839*	
RttT 16	-7.700***	-8.701		-8.618**	-9.105	
FEFP Spending (log)	-1.284*	.049	-1.268*	-1.346	1.214	-1.385
Total Spending (log)	7.832	3.726	6.462	-7.297	-11.442	-11.629
Median HH Income (log)	-14.951**	-14.296***	-13.661**	-15.959*	-14.115*	-13.465
Teacher Salary (log)	14.781**	4.953	13.840*	16.815*	3.107	15.437*
Teachers' Years of Experience	-.351*	-.201	-.380*	-.541	.133	-.664*
Poverty	-.060	-.071	-.043	-.120	.062	-.091
Total Students (log)	6.956	9.180	7.104	-2.917	-.430	-2.475
White				-.251	-.346	-.249
Constant	-61.809	.602	-54.669	186.715	4.503	211.092
N	802	733	802	468	400	468
R-sq	.762	.102	.753	.548	.132	.518
Adj. R-sq	.732	.073	.724	.446	.089	.416

* p<0.05, ** p<0.01, *** p<0.001. Year dummy variables are included. They are 1 for the years represented, 0 for other years. For example, the Year 12 dummy variable has the value of 1 for 2012, of 0 for other years. For the average estimation, the dummy variable presents 1 for years after 2010; and 0 for years of 2010 and before, depending on the tests' time periods.

Table 2. Intrastate Comparison - Reading and Mathematics Test Scores

	Reading Scores						Mathematics Scores					
	Fixed Effects		First Differencing		Average estimation		Fixed Effects		First Differencing		Average estimation	
	Grade 5	Grade 9	Grade 5	Grade 9	Grade 5	Grade 9	Grade 5	Grade 7	Grade 5	Grade 7	Grade 5	Grade 7
RttT Average					-.824	.887					1.842	1.148
RttT 11	-.560	.854	-.594	1.120			2.887	1.772	3.082	1.947		
RttT 12	-1.552	-1.512	-2.254	-.863			.407	-.511	-.349	-.171		
RttT 13	-.404	3.195	-1.158	3.876			2.131	2.079	1.456	2.090		
FEFP Spending (log)	-1.045	1.849	-1.736	1.372	-1.001	1.985	-.948	-.172	-2.790*	1.333	-.858	.272
Total Spending (log)	7.272	-4.630	18.987	-10.150	7.788	-2.144	-25.991*	-15.664	-15.206	-10.988	-25.431*	-14.509
Median HH Income (log)	-.011	-5.137	-4.901	-2.092	.332	-4.535	-1.160	-1.499	-6.874	-2.447	-.176	-.704
Teacher Salary (log)	4.161	-4.714	8.423	-10.108	4.167	-4.285	9.907	-5.318	11.467	-1.590	9.681	-5.315
Teachers' Years of Experience	.208	.206	.030	.569	.225	.260	.657	-.537	.465	-.105	.692	-.498
Poverty	-.076	.166	-.016	.158	-.074	.172	-.013	-.102	.077	-.225	-.007	-.096
Total Students (log)	19.918	5.387	29.238	-6.137	19.721	4.990	10.987	-25.838*	5.553	-35.974*	10.453	-26.293*
White	-.314	.613	-.893	.636	-.296	.661	.884*	.687	-.192	.666	.928*	.729*
Constant	-216.719	89.326	1.339	-1.188	-224.924	54.874	39.542	484.177*	-3.639	-2.578	27.693	465.685*
N	267	267	200	200	267	267	267	267	200	200	267	267
R-sq	.036	.145	.066	.112	.034	.120	.145	.123	.144	.119	.140	.115
Adj. R-sq	-.378	-.224	-.000	.049	-.366	-.247	-.223	-.254	.084	.057	-.217	-.252

* p<0.05, ** p<0.01, *** p<0.001. Year dummy variables are included. They are 1 for the years represented, 0 for other years. For example, the Year 12 dummy variable has the value of 1 for 2012, of 0 for other years. For the average estimation, the dummy variable presents 1 for years after 2010; and 0 for years of 2010 and before, depending on the tests' time periods.

Table 3. Bootstrap Results - Intrastate Comparison

			Fixed effect regression				Bootstrap regression Replication = 1000			
	Observed Coef.		Std. Err.	p>|t|	95% Conf. Interval		Bootstrap Std. Err.	p>|z|	Normal-based 95% Conf. Interval	
Graduation Rates 2005-2016	RttT Average	-6.982	1.243	.000	-9.423	-4.541	1.880	.000	-10.666	-3.298
	RttT 11	-.884	2.276	.698	-5.352	3.584	2.760	.749	-6.294	4.526
	RttT 12	-1.087	2.280	.634	-5.563	3.389	3.530	.758	-8.005	5.831
	RttT 13	-10.900	2.273	.000	-15.362	-6.438	3.770	.004	-18.288	-3.512
	RttT 14	-9.034	2.270	.000	-13.491	-4.576	4.462	.043	-17.779	-.289
	RttT 15	-12.146	2.277	.000	-16.617	-7.675	4.170	.004	-20.319	-3.973
	RttT 16	-7.700	2.270	.001	-12.157	-3.243	3.800	.043	-15.146	-.253
Graduation Rates 2010-2016	RttT Average	-7.945	2.322	.001	-12.510	-3.380	5.910	.179	-19.529	3.640
	RttT 11	-1.969	2.960	.506	-7.790	3.851	6.689	.768	-15.080	11.142
	RttT 12	-2.362	2.960	.425	-8.181	3.457	6.884	.732	-15.854	11.130
	RttT 13	-11.601	2.953	.000	-17.409	-5.794	6.495	.074	-24.331	1.128
	RttT 14	-9.868	2.962	.001	-15.692	-4.044	6.960	.156	-23.508	3.773
	RttT 15	-13.132	2.956	.000	-18.945	-7.319	6.827	.054	-26.511	.248
	RttT 16	-8.618	2.944	.004	-14.406	-2.830	7.171	.229	-22.672	5.436
Reading Test Scores Grade 5	RttT Average	-.824	1.796	.647	-4.367	2.720	3.585	.818	-7.850	6.203
	RttT 11	-.560	2.176	.797	-4.853	3.733	3.802	.883	-8.013	6.893
	RttT 12	-1.552	2.202	.482	-5.897	2.792	4.754	.744	-10.870	7.765
	RttT 13	-.404	2.183	.853	-4.712	3.902	4.370	.926	-8.969	8.160
Reading Test Scores Grade 9	RttT Average	.887	1.703	.603	-2.472	4.246	2.303	.700	-3.628	5.402
	RttT 11	.854	2.035	.675	-3.160	4.868	3.011	.777	-5.048	6.755
	RttT 12	-1.512	2.060	.464	-5.575	2.551	2.920	.605	-7.235	4.211
	RttT 13	3.195	2.041	.119	-.833	7.222	3.324	.337	-3.321	9.710
Mathematics Test Scores Grade 5	RttT Average	1.842	2.163	.395	-2.424	6.109	4.358	.673	-6.700	10.384
	RttT 11	2.887	2.616	.271	-2.274	8.047	4.946	.559	-6.807	12.580
	RttT 12	.407	2.647	.878	-4.817	5.630	4.914	.934	-9.225	10.038
	RttT 13	2.131	2.624	.418	-3.046	7.308	5.640	.706	-8.924	13.186
Mathematics Test Scores Grade 7	RttT Average	1.148	1.181	.536	-2.504	4.799	2.242	.609	-3.248	5.543
	RttT 11	1.772	2.235	.429	-2.638	6.181	2.726	.516	-3.571	7.114
	RttT 12	-.511	2.262	.822	-4.974	3.952	2.483	.837	-5.379	4.357
	RttT 13	2.079	2.242	.355	-2.344	6.503	2.640	.431	-3.094	7.252

Comparison with School Districts/Counties in the Other States

In the Florida-Texas comparison model, the DID estimators are positive and highly significant in all observed years (Table 4). This result indicates that the graduation rates of Florida counties after RttT's launch were substantially higher than the trend expected in the case of no RttT program. Moreover, the increases in the coefficients ' sizes imply the growing effects of RttT with time. On average, the graduation rate of counties in Florida rises by nearly seven percentage points in contrast to the forecasted rate without RttT implementation. On the contrary, the DID estimators in the Florida-Alabama comparison are unstable (Table 4). The coefficient is positively and insignificant for 2011 but turns negatively significant for 2013 and 2014 and is negatively insignificant for the other 3 years. On average, the interaction term is negative and statistically insignificant ($b=-1.06$, $p>.05$). Thus, the influence of RttT implementation is not explicit when the student outcomes of school districts in Florida are compared to those in Alabama. The first differenced estimation provides similar results, except a positively significant result for 2011. Consequently, the hypothesis H1b cannot be reinforced: it is not clear that RttT did make positive changes in Florida's student achievements.

To sum up, the results of the DID regression provide an uncertain scenario for RttT's influences. They are also consistent with the patterns that the time-series analysis reveals. These conclusions prevent us from affirming the positive impacts of RttT programs on student outcomes.

Table 4. Comparison across States – Graduation Rates

	Florida - Texas			Florida - Alabama		
	Fixed Effects	First Differencing	Average estimation	Fixed Effects	First Differencing	Average estimation
RttT Average			6.688***			-1.062
RttT 11	2.750***	2.588***		1.960	1.686*	
RttT 12	4.182***	3.908***		-.014	-.475	
RttT 13	5.384***	5.278***		-3.488***	-4.090**	
RttT 14	7.047***	6.643***		-3.872***	-4.648**	
RttT 15	10.802***	10.705***		-.331	-1.004	
RttT 16	10.062***	10.014***		-1.231	-2.103	
Total Spending (log)	.562	.438	-.186	-1.500	-4.777	-1.761
Economically Disadvantaged Students	-.021	.068**	-.032			
Poverty				.023	.059	.012
Total Student s(log)	-6.245***	-.318	-6.326**	-10.506**	2.405	-12.639***
White	.010	.172*	-.057	-.025	-.036	-.002
Constant	135.005***	1.249****	146.700***	179.201**	1.808***	199.013***
N	2233	1914	2233	1386	1188	1386
R-sq	.297	.071	.208	.564	.090	.546
Adj R-sq	.174	.063	.071	.485	.078	.466

* p<0.05, ** p<0.01, *** p<0.001. Year dummy variables are included. They are 1 for the years represented, 0 for other years. For example, the Year 12 dummy variable has the value of 1 for 2012, of 0 for other years. For the average estimation, the dummy variable presents 1 for years after 2010; and 0 for years of 2010 and before, depending on the tests' time periods.

Findings and Discussion

The inconsistent results of the DID tests indicate an ambiguous effect of RttT. In the intra-state comparison, RttT did not produce any influence on the reading and mathematics test scores. However, it seemed to decrease the graduation rates of high school students. Both results diverge from the initial expectations. Across states, the assumption of the positive impacts of RttT seems reasonable when the achievements of counties in Florida are compared to those in a non-applicant state. Displaying robust evidence of the positive impacts of RttT, the Florida-Texas comparison proves that the RttT can help local governments move forward and attain higher student outcomes. Nonetheless, in the case of Alabama – a state which tried twice to join RttT – there is no persuasive evidence with which to differentiate the two compared groups 'performances.

These outcomes of the empirical estimations lead us to three main critical points. The first point is that the possible mutual influence among school districts or states regarding education policy reform may, in some cases, lessen the discrepancies in education improvement between grant program participants and non-participants. Another potential reason for the research results can stem from the limitation of standardized tests in reflecting student achievements due to the pressures of an accountability system mentioned above. While these two hypotheses will need further research to identify their levels of influences on RttT's effectiveness, a factor that can be recognized is the policy strategy. RttT design did not totally follow some key principles in developing results-based grants. This could restrict the advantages, as mentioned earlier, of results-based grants, thereby affecting the program's success. The failure in

fully developing a results-based transfer may present the first crucial determinant of the unexpected results of RttT. The following explanation clarifies these three arguments in the above order.

First, the policy diffusion or the spill-over effects of the grant program implementation might have partly affected the comparison conclusions. The unexpected conclusion of the intra-state DID regression might result from the relationships or mutual influence among school districts within a state. Florida also applied a performance-oriented approach in allocating funds to LEAs. Florida required participating LEAs to sign MOUs containing the targets for their individual projects for school districts before releasing RttT funds. After that, the LEAs had the discretion to design their own plans. The non-participating districts in the control group were the districts not willing to commit to the program's targets. Without financial support, these school districts were unlikely to pursue reform policies. Nevertheless, the discussion on policy diffusion between states, as shown in the analysis, can also be applied to school districts because school districts within a state have both geographical and demographical proximities. Ajilore (2013), moreover, argued that school districts compete with one another regarding their student outcomes. Spatial effects among school districts can result in changes in spending per student in one district when its neighboring districts raise their spending levels. He highlighted that characteristics of neighboring districts, such as reforms or shared revenues from the state, can indirectly affect the spending per student in a school district. Therefore, there is a possibility that non-participating school districts themselves might have managed to invest in improving their educational system to catch up with surrounding districts participating in RttT. Similarly, with the intention to secure

the grant, Alabama may have implemented some educational reforms and innovative measures compared to the non-applying states—Texas. Such activities may have contributed to blurring the differences between the education outputs at local level in participating and non-participating states.

Second, the debates on standardized test scores being the most popular tool to reflect educational achievements can play a role in the interpretation of the regression estimation. While an increased test score is considered to be associated with an enhanced academic achievement, it does not always present a correct index of educational improvement. By analyzing the process of managing and preparing for standardized tests in public schools, Haladyna et al. (1991) showed the pressure these schools faced to raise test scores. This pressure leads to "test score pollution," which undermines the capacity of test scores to be efficient reflections of educational achievement (Haladyna et al., 1991). Further studies might be needed to examine to what extent this phenomenon could affect test scores and graduation rates in treatment and control groups, thus altering the outcomes of the DID comparisons. This problem can highlight what we have discussed earlier about the complication in selecting standards and measurement regarding educational outputs, and the potential adverse consequences on performance improvement caused by the rigidity of an accountability system.

Last, regarding the determining factors in designing an output-based grant, RttT was not likely to satisfy both criteria relating to outputs and citizen participation in the transfer design. The pre-specified outputs for RttT appear to include input factors. The report of the US Department of Education stated a broad view of the impacts of the program:

> The goal of the program was ambitious: to bring together leaders from every level of school governance — from classroom teachers to state-level officials — to develop plans that would help prepare students for success in an information-and innovation-driven job market, where quality education is essential both to national economic strength and to individual opportunity. Race to the Top invited state leaders to put forward plans to improve not one or two isolated elements of their schools, but to develop and implement comprehensive statewide plans to improve entire systems. (USDOE, 2015b, p.vi)

Consequently, RttT encompassed many elements of educational reforms such as high-quality and enhanced assessment standards, statewide longitudinal data, and effective teacher preparation programs. Similarly, the scoring rubric for the grant competition included, inter alia, factors related to reform agendas, data systems, and improvements in teacher effectiveness. Therefore, among the intended results that recipient states committed to achieving, there were many targets relating to the inputs of the educational service delivery process.

Additionally, the conflict between the need for adaptation and innovation for improved productivity and the requirement of following the plan in an educational accountability system could be revealed in RttT. While the number of RttT reform policies enacted is regarded as an indicator of the program's success, it also indicates the complexities involved in boosting student achievement. For example, the number of program targets, initiatives, and mechanisms subject to reform policies implies drastic

changes in recipients 'organizations. Making such drastic changes required much work to adapt to the new circumstances. Organizational behavior theory refers to this type of adaptation as "ongoing process states" that reflect the health of an organization through the four criteria of "adaptability, a sense of identity, capacity to test reality and integration" (Ott et al., 2008, p. 405). This changing process also comes under organizational development, which requires that an organization develop "numerous strategies and techniques for improving organizations" (Ott et al, 2008, p. 407). School districts in Florida had to deal with these challenges, and, during the transformation process, they might not always have been successful in their attempts to improve educational results. As a consequence, the attainment of reform policies as the result of RttT did not necessarily translate into higher student achievement. In this case, the focus on process factors seemed to turn higher student achievements into an outcome for which the degree of accomplishment depends on the capacity of the subnational governments as well as many other factors not under the program's control.

Another shortcoming in RttT is the lack of citizen voices, which is a necessity in an output-based transfer. Steffensen (2010) included citizens, voters, taxpayers, and users in his framework of the accountability relationships that should be present in performance-based grants. He also raised awareness of the limited tools that citizens have to monitor program results. Meanwhile, a World Bank report (WB, 2008) highlighted the role of the public and pointed out that strict conditions on outputs might divert local accountability mostly upward for grantors, leaving citizens out of the process (WB, 2008). In a more direct way, Boadway and Shah (2009) showed that public approval is

the crucial factor in ensuring the efficiency of a performance-oriented approach. The response of the community to public services reflects grant recipients ’compliance and helps grantors decide the penalties for non-compliance, if any. Moreover, the availability of citizen feedback ensures the competitiveness, innovation, and transparency of the process (Boadway and Shah, 2009). Likewise, Ryan (2005) advocated for a “democratic educational accountability” in which participation of all relevant stakeholders, including not only teachers and administrators but also parents, students and citizens, presents the focal point. The public involvement would establish a “mutual accountability” that could help define effective means to attain required educational achievements in the accountability system, thus being able to tackle the limitation of educational accountability in improving performance (Ryan, 2005).

Florida had to follow a hierarchical reporting system during the implementation process for RttT. There was no room for public feedback in this system and hence no channel through which to integrate customers’reflections in order to adjust the grant’s implementation process. Although it would have been difficult to follow this principle in practice, efforts to maintain some feedback channels during the process might have made it easier to pursue the desired outputs effectively.

In summary, a solid conclusion about the positive impacts on student achievement could not be provided. The test results, however, show some positive influences of RttT when the comparison with counties in a non-applying state is considered. The sustainability and the extent of success of RttT seem to depend on how states and school districts used their discretion to deal with challenges originating from system reform and

organizational changes. The study findings imply that better discipline in a results-based transfer design in the educational accountability system is required in order to reach the planned goals of such grants.

CHAPTER 5. FOUNDATION PROGRAM IN FLORIDA

Results

Choropleth Maps

In the choropleth maps of total current expenditure per student (Figure 12), the absolute values increased over time, but the total current spending patterns across Florida's school districts were generally comparable in the 2005, 2010, and 2015. Most districts were in the lower-level categories. Likewise, the funding scheme of FEFP across school districts appeared stable through the studied years (Figure 13). Figure 14 illustrates a similar situation in the number of young people living in poverty. The poverty situation across local districts did not change much over time. Together, these results show the relative socioeconomic conditions and the comparative education expenditure needs among Florida's school districts were not likely to vary over the years. Consequently, the state was not likely to have to alter its formula much through the years.

The color gradations are subtle across the map of total current expenditure per student. It seems there were no considerable disparities in total expenditures per student among school districts. In addition, the FEFP grant allocations appeared to be relatively compatible with the poverty in the districts. This may imply the equalization transfers worked in Florida. FEFP allocation likely contributed to equalizing spending per student in the state.

Patterns of teachers' salaries and the proportion of FEFP funding throughout the 3 years also appeared relatively similar (Figure 15). The socioeconomic situations and the teacher salary policies of the school districts appeared generally stable over time. However, grant allocations did not seem to be compatible with salary mechanisms.

Districts receiving larger grants were not always more generous with their teacher salaries. FEFP did not appear to affect how school districts decided to establish their salary structures.

Florida's high school graduation rates increased gradually through the years (Figure 16). However, the graduation rate distribution among school districts did not have a constantly trend over time. Compared with 2005, graduation rates in Florida in 2010 seemingly experienced an improvement, with many districts upgrading to the relatively higher-level groups. However, many school districts fell back into the comparatively lower levels of achievement in 2015. Simultaneously, the color arrangement of graduation rates across local districts did not appear strongly compatible with the scheme of foundation grant allocation and total current spending per student. This result seems to highlight the loose relationship between financial resources and improved student achievement.

One reason for these changes in graduation rates may stem from educational reform policies in the state. During 2010–2015, Florida deployed the RttT. As discussed in analyses in Chapter 2 and Chapter 4, RttT encouraged participating states to adopt many reform policies to strengthen their education systems. The average graduation rate of the 62 school districts that participated in the program was likely to decrease by about 7 percentage points, compared to the rate the districts might have had if there had not been RttT intervention. Since RttT ended in 2015, these visual images of graduation rates in Florida seem reasonably related to RttT. The estimated decline in graduation rates of RttT-participating school districts may somewhat explain the increase in the number of districts in the low achievement groups in 2015.

Figure 12. Total Current Expenditure Per Student

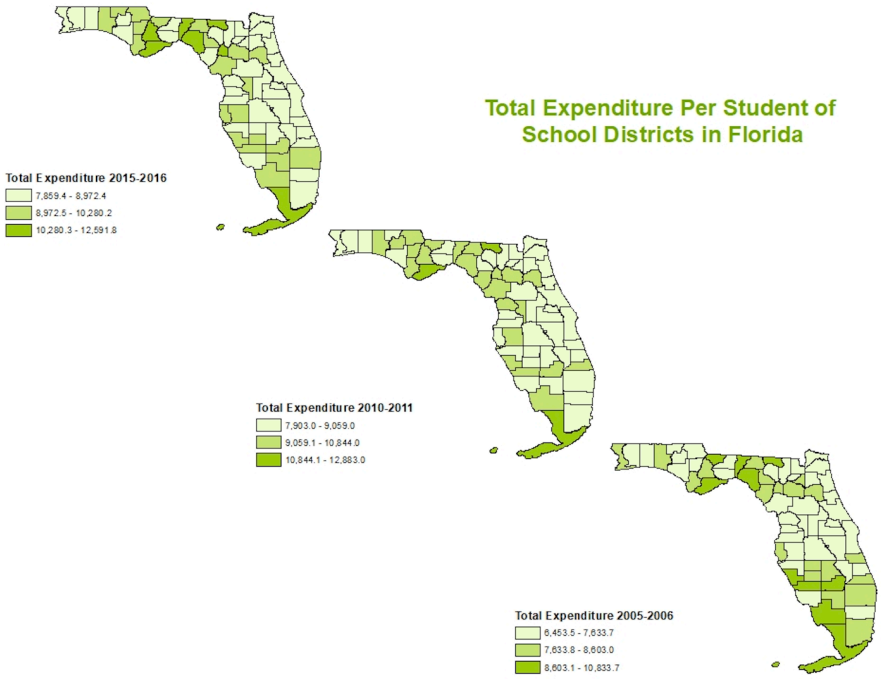


Figure 13. FEFP Funding Per Student

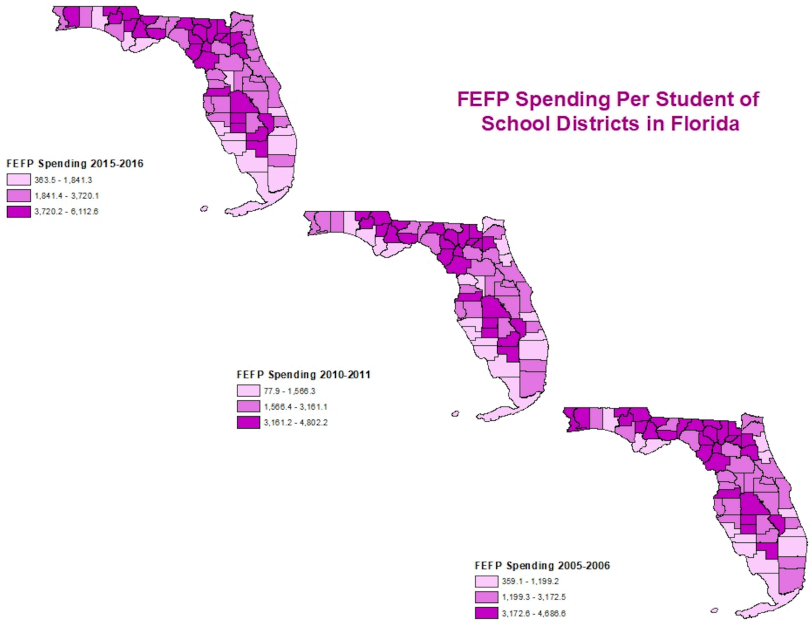


Figure 14. Percentage of People under Eighteen in Poverty

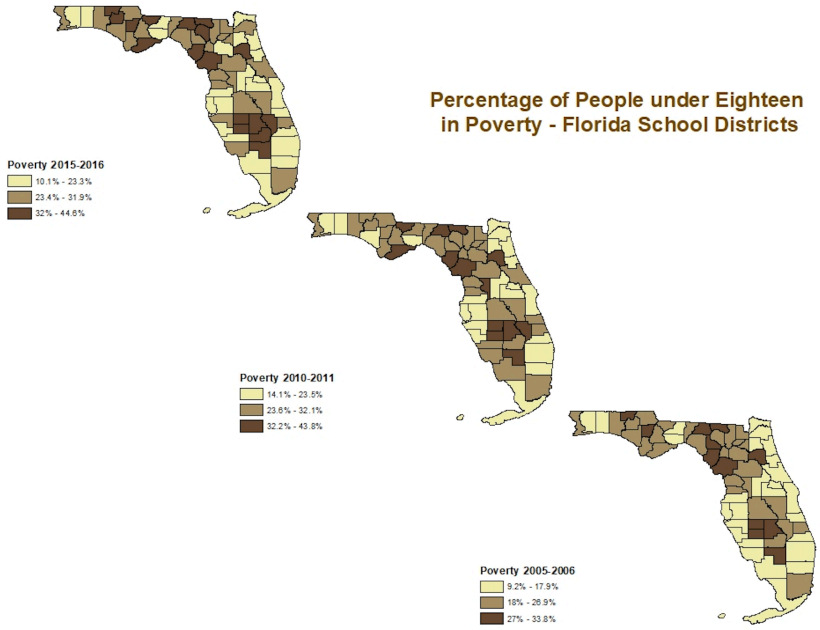


Figure 15. FEFP and Average Salaries of Teachers

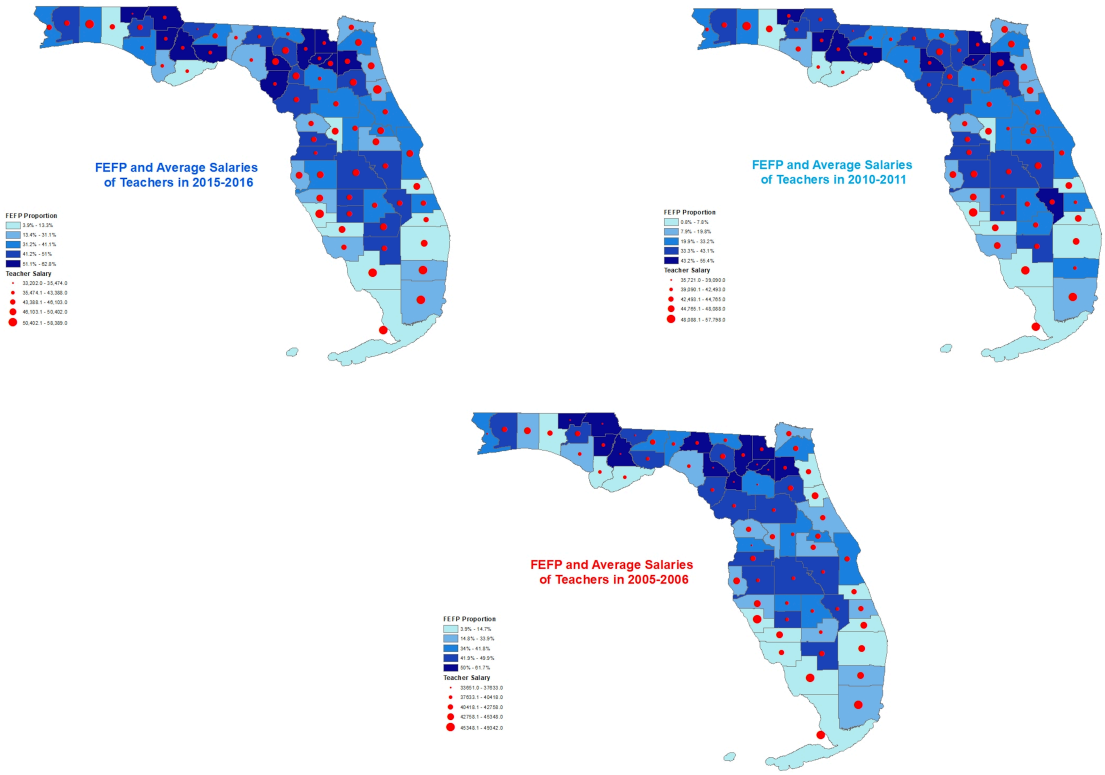
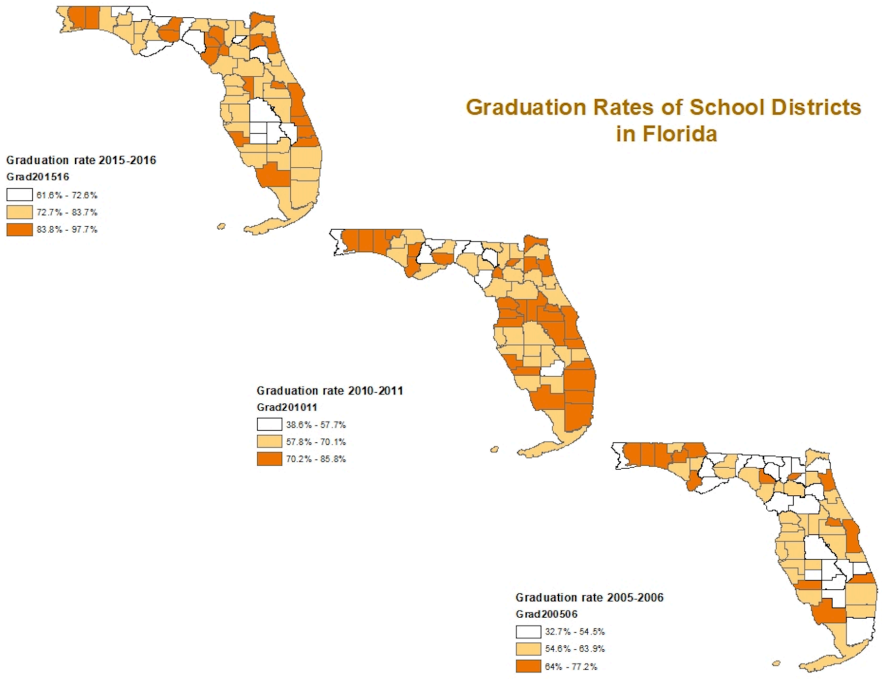


Figure 16. Graduation Rates



The Coefficient of Variation

The coefficients of variation across school districts were small and relatively stable in all examined variables, except dropout rates (Table 5). The coefficients of variation in total revenue per student fluctuated from .108 to .211. Meanwhile, the indicator in total expenditure per student was within a range from .106 to .270. Compared to total revenue per student, the equity in total expenditure per student was less stable and tended to decrease slightly in recent years. Florida's coefficient of variation in total revenue per student in the 1972–1973 school year, before FEFP implementation, was .14. It fell slightly to .12 in 1975–1976 (Carroll, 1979). Another estimation from the US Department of Education showed the coefficient of variation in revenue per student in Florida was .123 in 1969, .121 in 1976, and .096 in 1983, while the mean values of all states were .155, .164, and .203, respectively (Guthrie et al., 1988). Consequently, Florida during 2005–2016 was likely to have a fair result in equalizing school districts' financial resources, but it did not always perform better than it had done in the past.

The school districts experienced the lowest disparities in pupil per teacher ratio and the average teacher salaries (mostly smaller than .01). School districts did not achieve similar achievements in dropout rates, especially when compared to graduation rates. The gap in dropout rates across school districts was also likely to increase through the years. This rise shows a need for improvement in the system operation

Table 5. Coefficient of Variation

Year	Mean	SD	COV	Mean	SD	COV	Mean	SD	COV	Mean	SD	COV
	Total Expenditure per Student ($)			Total Revenue per Student ($)			Graduation Rate (%)			Dropout Rate (%)		
2005	9,779.627	1,740.649	0.178	9,573.030	1,860.560	0.194	58.395	7.768	0.133	3.666	2.090	0.570
2006	10,980.134	2,948.721	0.269	10,888.418	2,292.843	0.211	58.951	7.372	0.125	3.364	2.023	0.601
2007	11,590.254	3,134.439	0.270	11,208.209	1,682.838	0.150	61.337	9.407	0.153	2.625	1.570	0.598
2008	10,743.060	1,910.211	0.178	10,255.463	1,696.931	0.165	64.390	8.101	0.126	2.307	1.318	0.571
2009	10,217.194	1,163.730	0.114	10,071.537	1,203.052	0.119	66.648	9.229	0.138	2.207	1.532	0.694
2010	10,404.701	1,282.844	0.123	10,191.403	1,170.099	0.115	67.983	8.760	0.129	1.990	1.264	0.635
2011	9,656.642	1,142.952	0.118	9,154.806	989.855	0.108	71.836	8.376	0.117	2.040	1.291	0.633
2012	9,512.328	1,010.373	0.106	9,249.851	1,013.052	0.110	73.325	9.612	0.131	1.925	1.393	0.724
2013	9,903.134	1,224.823	0.124	9,654.612	1,047.050	0.108	74.448	8.782	0.118	1.667	1.219	0.732
2014	10,224.000	1,671.058	0.163	9,942.806	1,164.625	0.117	76.666	8.802	0.115	1.604	1.180	0.736
2015	10,604.687	2,023.611	0.191	10,443.194	1,656.240	0.159	80.189	7.360	0.092			
2016	10,740.776	2,311.131	0.215	10,402.328	1,202.694	0.116	80.304	8.058	0.100			
	Pupil-Teacher Ratio			Average Teacher Salaries ($)			Teachers' Average Years of Experience (year)					
2005	16.327	1.282	0.079	40,700.687	3,094.804	0.076	12.918	2.300	0.178			
2006	15.875	1.366	0.086	42,952.791	3,359.528	0.078	12.640	1.472	0.116			
2007	15.446	1.185	0.077	44,414.910	3,542.206	0.080	12.409	1.642	0.132			
2008	14.006	1.437	0.103	44,697.746	3,708.419	0.083	12.517	1.848	0.148			
2009	14.207	1.273	0.090	44,485.373	3,824.305	0.086	12.484	1.759	0.141			
2010	14.741	1.349	0.091	44,176.194	3,765.819	0.085	12.132	1.654	0.136			
2011	14.985	1.448	0.097	44,094.163	3,680.384	0.083	11.946	1.686	0.141			
2012	14.920	1.396	0.094	44,126.357	3,748.916	0.085	11.920	1.833	0.154			
2013	15.038	1.481	0.099	45,571.757	3,824.468	0.084	11.701	1.884	0.161			
2014	15.281	1.367	0.089	45,526.432	4,278.580	0.094	11.413	1.840	0.161			
2015	15.240	1.461	0.096	45,644.687	4,420.201	0.097	11.232	1.891	0.168			
2016	15.218	1.724	0.113	45,204.760	3,877.587	0.086	10.743	2.053	0.191			

SD: Standard Deviation

COV: Coefficient of Variation

Patterns of Different Quintiles

The mean values of examined variables of different quintiles are reported in Tables 6, 7, 8, and Figure 17. FEFP grants per student were allocated inversely with the financial capacities of the school districts and the proportion of low-income students. However, the program was not likely to distribute higher grants to school districts with more students in minority groups or more programs for language assistance and special needs. The grant allocation sometimes even contradicted the expected trend in the case of non-White students and programs of language assistance. However, the grant was highest in school districts with the largest proportion of students in special programs.

Meanwhile, the expenditure per student was not likely to strongly correlate with local sources and the proportion of poor students. The spending levels were not much different among the different district groups, although the wealthiest group had the most significant expenditures per student. Spending across district groups also did not seem to reflect higher investment levels in districts with larger shares of students in vulnerable groups, except groups of students in special programs in 2015, when the expenditure in districts of Quintile 5 was the largest.

Teachers' average salaries were higher in districts with larger local sources and a smaller proportion of low-income students. Teachers appeared to be paid higher in districts with a higher percentage of students in language assistance programs. However, average teacher salaries were not likely correlated with the proportion of non-White students. Notably, teacher salaries seemed lower in districts with higher numbers of students in special programs. The teachers' years of experience and pupil–teacher ratio

were comparable across districts, in all cases, indicating it does not relate to local own revenue sources or the characteristics of students in the school districts.

Graduation rates became less associated with local revenues over time. However, districts with higher proportions of students in poverty were likely to have lower graduation rates. Likewise, the inverse relationship with graduation rates was slightly reflected in quintiles by non-White students and enrollment in special programs. Quintile 1 in these groups often had the highest graduation rates, on average. There was not a clear pattern with quintiles by students in language assistance programs.

Graduation rates by specific student groups showed similar trends. Graduation rates by subgroup did not appear to correlate with local sources. Additionally, graduation rates of economically disadvantaged and non-White students were also likely to have an inverse association with the increase in the number of students in the respective groups. On the contrary, graduation rates of students in special programs in districts with a larger share of students with a disability were sometimes higher. This positive relationship between graduation rate and enrollment of students with disabilities was not always true across quintiles. However, Quintile 5 (the most extensive number of students in the group) always had the highest graduation rates. Another point is that graduation rates of students in language assistance programs seemed not to have a solid pattern across quintiles (similar to the trend of general graduation rates). Nevertheless, Quintile 1 (smallest number of students in the group) often had graduation rates much lower than all the other quintiles.

The average dropout rates seemed to decline over time. They were not likely to correlate with local revenues per student. Dropout rates of districts with the largest share

of students in poverty were often highest, but they did not show a clear pattern across district groups. Likewise, there were no substantial differences in dropout rates across school districts with different proportions of non-White students or students in specific programs.

Table 6. Grant Amount, Expenditures, and Teacher Salaries by Year and by Quintile

Quintiles	FEFP per Student ($)			Total Expenditure per Student ($)			Average Teacher Salaries ($)		
	2005	2010	2015	2005	2010	2015	2005	2010	2015
Revenue from local sources per student									
1	4200.775	4068.138	4961.674	8679.143	10162.500	10815.286	37578.214	41160.857	41615.357
2	3461.122	3452.511	4239.336	9791.154	9925.231	11027.629	39957.308	43220.308	45272.077
3	2974.686	2697.754	3478.726	9345.214	10097.857	9849.857	40671.071	43514.643	46068.500
4	2331.274	1846.654	2481.571	9901.385	10228.462	9857.615	41994.692	45284.462	47572.154
5	578.129	420.554	1087.219	11299.308	11651.692	11514.846	43544.615	47983.538	47972.692
Percentage of students from poor families									
1	1770.887	1969.868	2564.613	10282.714	10170.000	10119.214	43634.357	46864.357	48939.000
2	2109.067	2484.279	2552.684	10084.231	9989.000	10053.615	41960.769	44235.846	46789.615
3	3015.602	2348.835	3351.184	9364.214	10625.714	9895.500	38876.500	44216.143	45129.714
4	3008.558	2888.967	3971.616	9690.615	10867.231	10846.615	40048.462	42777.615	43729.154
5	3825.638	2981.907	4012.321	9469.615	10372.615	12200.385	38898.000	42577.154	43422.154
Percentage of students enrolled in programs of language assistance									
1	3303.744	3253.580	3988.729	9389.286	10003.071	11384.214	38470.786	41759.286	42806.000
2	2964.931	2352.808	3366.457	8797.538	10803.385	10366.923	40274.615	43573.308	43797.615
3	2642.849	2406.991	3143.387	9397.714	9900.714	10707.429	41118.714	44727.071	46853.357
4	2451.803	2273.094	3123.599	11041.538	10859.923	10258.538	41436.462	45338.846	46575.154
5	2277.186	2284.162	2736.682	10331.462	10526.077	10238.462	42432.231	45626.000	48316.692
Percentage of nonwhite students									
1	2702.539	2605.077	3606.667	8896.000	10261.143	10944.429	40034.643	42880.071	42791.571
2	2735.641	2846.028	3584.437	9861.615	10550.615	11036.923	40070.846	43314.308	45488.154
3	2524.565	2129.211	2842.204	9926.857	10163.643	9998.143	41340.929	45720.214	46959.857
4	2608.588	2522.599	3393.998	9994.077	10690.692	10731.615	41122.769	44428.308	45814.538
5	3124.527	2538.973	2984.107	10276.231	10387.000	10332.846	40936.231	44519.000	47287.615
Percentage of students enrolled in special programs									
1	2119.089	2650.543	2958.969	10185.571	10057.214	10097.286	42276.714	44210.357	46632.714
2	2715.659	1699.663	2953.944	9874.308	10011.308	9588.538	41246.000	46128.231	47180.846
3	2534.996	2174.331	3553.564	9575.143	10928.286	10374.500	40014.143	45364.214	45078.643
4	2959.016	2730.292	2908.488	10264.385	10262.462	10865.615	41026.308	42513.231	46093.154
5	3411.178	3380.090	4031.550	8983.231	10750.692	12154.231	38871.846	42570.923	43205.615

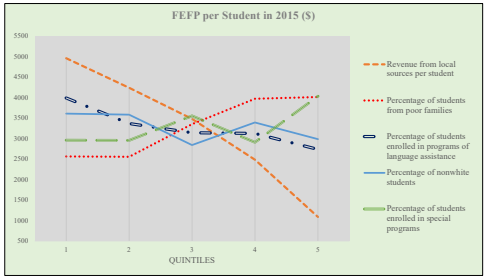
Table 7. Education Outcomes, Pupil Teacher Ratio, and Teachers' Years of Experience by Year and by Quintile

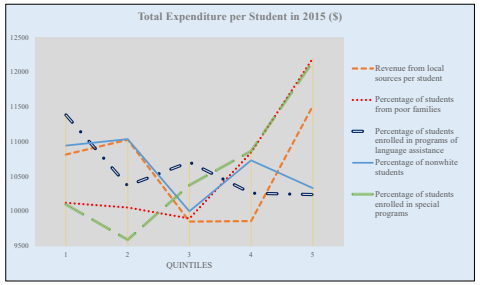
Quintiles	Graduation Rate (%)			Dropout Rate (%)			Pupil-Teacher Ratio			Teachers' Average Years of Experience (year)		
	2005	2010	2015	2005	2010	2014	2005	2010	2015	2005	2010	2015
Revenue from local sources per student												
1	55.339	62.832	80.034	3.471	2.114	1.544	15.757	14.509	15.564	13.868	11.881	11.019
2	56.381	69.333	75.970	4.315	2.069	2.012	16.423	14.743	14.908	12.360	12.035	11.474
3	57.726	67.124	80.930	4.200	2.379	1.676	16.429	14.612	15.013	13.260	11.757	10.794
4	58.705	69.069	82.979	3.308	1.754	1.263	16.692	15.074	15.915	12.418	12.534	12.102
5	64.110	72.018	80.990	3.008	1.592	1.523	16.369	14.795	14.793	12.583	12.499	10.822
Percentage of students from poor families												
1	65.678	76.039	84.500	1.986	1.071	1.140	16.564	14.851	15.057	12.424	12.702	12.031
2	59.364	70.113	82.239	3.231	2.077	1.745	16.700	15.242	15.008	12.518	11.806	11.702
3	57.316	67.838	79.651	4.007	1.821	1.356	16.121	14.561	15.834	13.569	12.854	11.018
4	55.440	63.412	78.407	4.477	2.262	1.313	15.962	14.148	14.725	13.193	11.194	10.955
5	53.698	61.902	75.869	4.731	2.800	2.519	16.285	14.909	15.544	12.874	12.003	10.409
Percentage of students enrolled in programs of language assistance												
1	58.467	69.910	82.109	4.536	1.900	1.324	15.507	14.941	15.014	13.897	11.839	11.307
2	60.907	67.304	80.583	2.731	1.646	1.107	16.585	14.132	15.079	13.210	12.771	11.095
3	58.354	68.227	81.544	3.607	2.071	1.329	16.329	14.926	14.709	12.961	12.243	11.266
4	57.078	64.254	75.994	3.954	1.923	1.977	16.062	14.652	15.663	12.884	12.249	11.779
5	57.165	70.052	80.466	3.438	2.408	2.324	17.215	15.025	15.794	11.558	11.571	10.705
Percentage of nonwhite students												
1	62.868	72.755	82.756	3.479	1.436	1.056	16.557	14.891	15.434	12.878	12.204	11.331
2	62.600	68.038	81.254	3.385	2.046	1.654	15.192	14.192	14.881	12.408	12.245	11.625
3	58.228	70.044	81.317	2.643	1.286	1.193	16.336	14.927	14.827	13.739	12.819	12.059
4	55.946	63.018	76.887	4.262	3.138	2.198	16.692	14.394	15.355	13.255	12.203	10.935
5	52.001	65.532	78.449	4.654	2.138	1.991	16.838	15.275	15.721	12.248	11.128	10.140
Percentage of students enrolled in special programs												
1	60.874	68.496	81.558	3.043	2.050	1.756	16.993	15.178	16.042	12.885	11.729	11.140
2	61.238	72.475	78.506	3.531	1.969	2.220	16.454	15.498	15.708	11.975	12.400	11.561
3	56.403	67.742	80.821	4.264	2.071	1.291	15.836	14.556	14.961	12.370	11.827	11.047
4	58.046	67.603	79.931	3.000	1.538	1.337	16.092	13.898	15.108	12.740	12.432	12.012
5	55.376	63.577	79.976	4.492	2.308	1.427	16.246	14.558	14.342	14.664	12.324	10.422

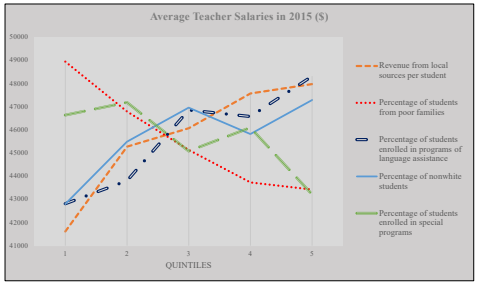
Table 8. Graduation Rates by Student Group, by Year and by Quintile

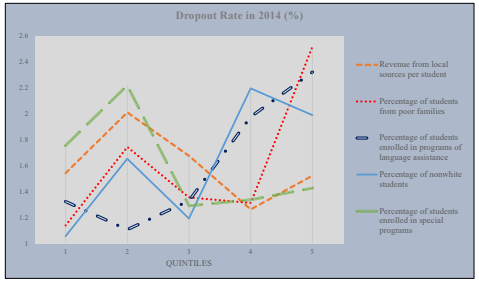
Quintiles	Graduation Rate of Economically Disadvantaged Students (%)			Graduation Rate of Nonwhite Students (%)		
	2005	2010	2015	2005	2010	2015
	Revenue from local sources per student			*Revenue from local sources per student*		
1	58.444	53.099	75.822	45.153	57.794	76.390
2	58.212	60.551	72.200	50.028	63.771	73.772
3	55.087	56.023	72.673	49.940	63.082	77.844
4	56.735	57.683	76.431	52.005	62.567	79.385
5	58.425	61.507	74.029	52.834	66.541	79.397
	Percentage of students from poor families			*Percentage of nonwhite students*		
1	59.381	63.092	75.960	55.601	67.891	82.067
2	53.662	57.522	74.365	52.596	63.316	77.900
3	58.486	57.175	73.082	48.250	63.904	76.781
4	60.320	54.765	74.080	45.406	55.964	72.964
5	54.720	55.453	73.626	47.433	61.840	76.721
	Graduation Rate of Students Enrolled in Special Programs (%)			Graduate Rate of Students Enrolled in Programs of Language Assistance (%)		
	Revenue from local sources per student			*Revenue from local sources per student*		
1	39.893	36.762	61.962	34.196	13.698	40.509
2	35.100	45.921	55.683	31.462	36.406	57.260
3	35.894	36.326	56.606	40.806	48.888	60.140
4	40.173	45.088	63.684	45.778	53.198	71.343
5	51.895	49.633	66.837	35.001	38.376	45.889
	Percentage of students enrolled in special programs			*Percentage of students enrolled in programs of language assistance*		
1	38.666	41.247	59.897	26.190	8.730	38.056
2	38.145	45.216	57.255	45.845	45.681	69.197
3	40.387	40.115	58.459	44.666	48.557	56.737
4	40.098	41.074	59.827	34.058	41.738	54.886
5	45.408	45.787	69.502	36.804	48.131	56.714

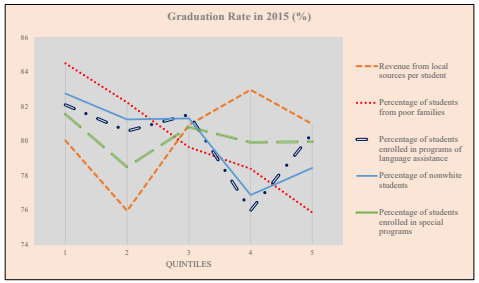
Figure 17. Studied Variables in 2015 by Quintile

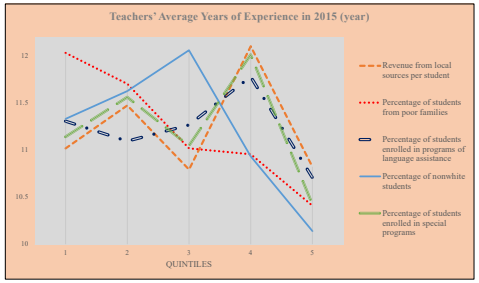


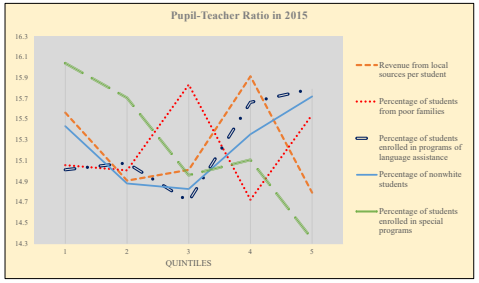












Panel Data Regression

The regression on total expenditure per student shows school districts with a larger share of FEFP funding in total revenue spend less (Table 9). A 1% increase in the proportion of FEFP funding may relate to a decrease of 5% in total expenditure per student (β=.005, $p< .001$).

The effects of FEFP on graduation rates and dropout rates appeared weak (Table 10). There is no evidence of a strong relationship between FEFP funding and student outcomes. If only the results of fixed-effect regression are considered, FEFP slightly increased the graduation rate of students in special programs and the dropout rate. School districts that received a higher percentage of FEFP funding per student were likely to experience an increased dropout rate by .003 (β=.308, $p< .05$). A 1% increase in FEFP per student appeared to lead to an increase of 0.026 percentage points in the graduation rate of students in special groups (β=2.554, $p< .05$). The size of these effects, however, was minute.

Table 11 shows the relationship between the FEFP grants and school districts' teaching development. The amount of FEFP grants strongly correlated with the ratio of pupils per teacher in classrooms. School districts with 1% higher than their neighbors in FEFP per student operated with a higher pupil–teacher ratio by 0.006 (β=.603, $p<.001$). They could also spend less on teacher salaries and tend to recruit teachers with less experience. However, similar to the pupil–teacher ratio, the coefficients of average teacher salaries and teachers' years of experience were also extremely small ($\beta= -.378$, $p< .01$ and $\beta= -.011$, $p< .01$, respectively). Furthermore, the first-differencing estimations of the two regressions on teachers 'salaries and experiences are not statistically

significant ($p > .05$). The effects of FEFP on the pupil–teacher ratio seemed stronger than on teachers' salaries and experience. This examination of the three intermediate input factors shows school districts that received more FEFP grants were likely to invest less in improving the teaching process. However, the effects were minor.

The investigation of direct effects of FEFP funding controlling for the process factors pupil–teacher ratio, teachers' average years of experience, and average teacher salaries are reported in Table 12. There was no significant relationship between FEFP per student and student outcomes. The regression of graduation rates of students in special programs on FEFP has a coefficient different from zero and more negligible than the coefficient in the model of total effects ($\beta=1.836$, $p>.05$). In this direct effect model, the pupil–teacher ratio positively correlates with the group's graduation rates ($\beta=1.174$, $p< .01$). As a result, the pupil–teacher ratio appears to partially mediate the influence of FEFP on the graduation rate of students in special programs. That is to say, districts that were reliant more on the FEFP grants often had higher pupil–teacher ratios. Because a higher number of students in a class seemed to help increase the graduation rates of students in special programs, this increase appears to enhance the achievement of this student group (Figure 18). This result seems relevant to the above findings regarding the graduation rates of students in special programs in the different quintiles of school districts.

Likewise, the regression controlling for teachers' salaries shows FEFP was not likely to affect dropout rates. The coefficient differs from zero and iss smaller than the coefficient in the total effect model ($\beta=.227$, $p>.05$). At the same time, teachers' salaries showed a strong relationship with dropout rates ($\beta=-7.073$, $p<.001$). This result indicates

a partial mediation effect of teachers' salaries on the relationship between FEFP and dropout rates. Consequently, districts that received larger amounts FEFP aid appeared to recruit teachers with lower salaries. Since teachers' salaries are likely to be a factor that can improve education quality and reduce dropout rates, this limitation in raising salaries could lead to an increase in dropout rates (Figure 18).

Table 9. Effects of FEFP Funding on Total Expenditure per Student

Variables	Fixed Effects	First Differencing
FEFP share	-.005***	-.010***
Poverty	-.006***	-.005**
Median Income (log)	.628***	.340***
Nonwhite Students	-0.002	0.007
Total Students (log)	-.509***	-.649**
Revenue-Federal Sources (log)	-0.004	0.015
Constant	7.816	0.002
N	798	725
R-sq	0.253	0.183

* p<.05, ** p<.01, *** p<.001

Table 10. Total Effects of FEFP Funding on Education Outcomes

Variables	Graduation Rate 2005-2016		Dropout Rate 2005-2014		Graduation Rate of Economically Disadvantaged Students 2005-2016		Graduate Rate of Students Enrolled in Programs of Language Assistance 2005-2016		Graduation Rate of Students Enrolled in Special Programs 2005-2016		Graduation Rate of Nonwhite Students 2005-2016	
	FE	FD	FE	FD	FE	FD	FE	FD	FE	FD	FE	FD
FEFP per Student (log) (without the intervention of Pupil-Teacher Ratio)	.380	-.496	.262	.248	1.667	-1.107	1.207	-2.605	2.554*	.374	.227	-1.519
FEFP per Student (log) (without the intervention of Average Teacher Salaries)	-.093	-.363	.308*	.222	1.118	-1.181	.380	-2.398	2.028	.418	-.332	.418
FEFP per Student (log) (without the intervention of Teachers' Average Years of Experience)	.524	-.346	.189	.208	1.324	-1.233	.658	-2.746	2.281	.286	.305	-1.598

* p<.05, ** p<.01, *** p<.001. These models control for Poverty, Median Income, Nonwhite Students, Total Students, and Revenue-Federal Sources. Two of three variables, Pupil-Teacher Ratio, Average Teacher Salaries, Teachers' Average Years of Experience, are also controlled for, depending on the potential mediator in the model specification.

Table 11. Effects of FEFP Funding on Pupil-Teacher Ratio and Average Teacher Salaries (as a mediation)

Variables	Pupil-Teacher Ratio 2005-2016		Teachers' Average Years of Experience 2005-2016		Average Teacher Salaries 2005-2014	
	Fixed Effects	First Differencing	Fixed Effects	First Differencing	Fixed Effects	First Differencing
FEFP per Student (log)	.603***	.450***	-.378**	-.153	-.011**	-.004
Average Teacher Salaries	.787	-1.582	2.456	.394		
Teachers' Average Years of Experience	.024	-.019			.001	-.000
Pupil-Teacher Ratio			.031	-.023	-.000	-.002
Poverty	.022	.002	-.127***	.003	.000	-.001
Median Income (log)	-1.568	-1.570*	-8.409***	-1.866*	.257***	.100***
Nonwhite Students	-.070**	-.020	.023	.060	.007***	.008***
Total Students (log)	1.576	9.000***	7.034***	-.699	-.045	-.084
Revenue -Federal Sources (log)	-.084***	-.001	.025	.008	-.000	-.001*
Constant	6.786	-.075	11.867	-.227***	8.196***	.004*
N	796	721	796	721	662	587
R-sq	.146	.067	.264	.016	.440	.174

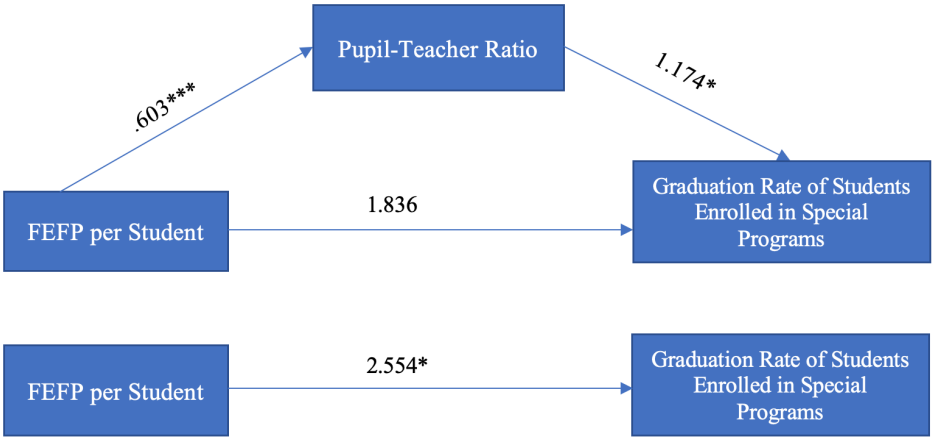
* p<.05, ** p<.01, *** p<.001

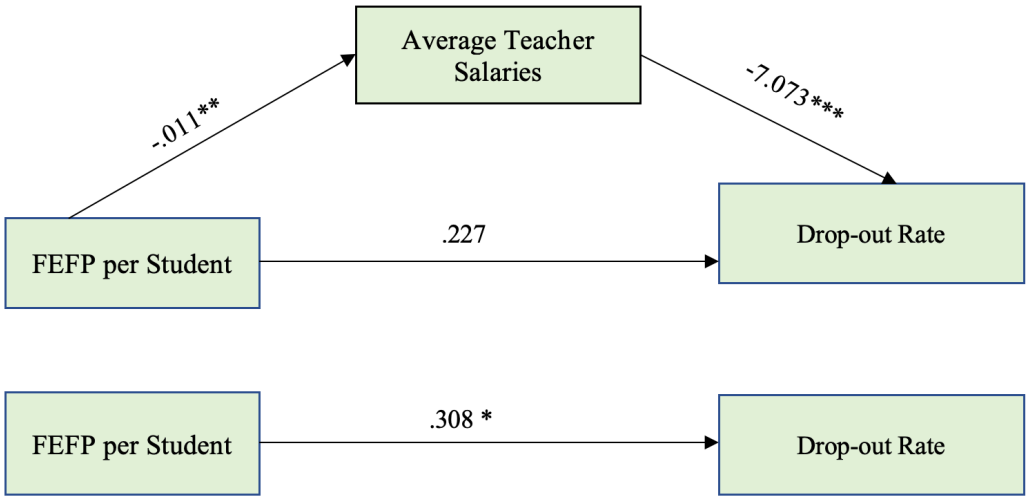
Table 12. Direct Effects of FEFP Funding on Education Outcomes

Variables	Graduation Rate 2005-2016		Dropout Rate 2005-2014		Graduation Rate of Economically Disadvantaged Students 2005-2016		Graduate Rate of Students Enrolled in Programs of Language Assistance 2005-2016		Graduation Rate of Students Enrolled in Special Programs 2005-2016		Graduation Rate of Nonwhite Students 2005-2016	
	FE	FD	FE	FD	FE	FD	FE	FD	FE	FD	FE	FD
FEFP per Student (log)	.136	-.366	.227	.212	.987	-1.228	.920	-2.336	1.836	.274	-.040	-1.525
Pupil-Teacher Ratio	.406*	-.289	.065	.082	1.129***	.268	.438	-.506	1.174**	.227	.442	.012
Average Teacher Salaries	16.781**	-.761	-7.073***	-2.772	-9.630	-11.901	41.361	7.879	-15.590	-35.863**	21.402**	-7.553
Teachers' Average Years of Experience	-1.029***	-.135	.138***	.032	-.893***	.032	.763	2.548**	-1.209***	-.084	-.924***	.479
Poverty	.733***	.003	-.080***	-.011	.513***	.076	.179	-.778	.779***	.053	.873***	.014
Median Income (log)	23.377***	-12.728**	-2.090	.877	12.523*	-17.190**	-3.684	-59.704**	23.583**	-13.130	33.664***	-11.785*
Nonwhite Students	1.084***	-.168	-.012	-.056	1.246***	.350	1.189**	-.136	1.426***	.294	1.357***	.217
Total Students (log)	.391	11.601	1.115	2.909	11.162	25.866	48.041**	138.218*	16.898	-26.257	7.860	15.095
Revenue -Federal Sources (log)	-.057	-.077	-.021	.002	-.380***	-.163	-.303	-.206	-.493**	-.355*	.026	-.059
Constant	-417.713***	2.261***	87.642***	-.143*	-146.141	1.582***	-898.391**	2.921*	-286.801	2.404***	-668.921***	2.624***
N	796	721	662	587	796	721	720	612	790	713	791	715
R-sq	.633	.025	.307	.027	.410	.030	.088	.041	.377	.024	.609	.022

* p<.05, ** p<.01, *** p<.001

Figure 18. Mediation Effects of Intermediation Inputs





Findings and Discussions

The results of the goal-free evaluation of FEFP are summarized in Table 13. The research outcomes provided by different research methods are compatible with and supplementary to each other. There are four main findings on the impact of FEFP on different groups of variables.

First, the FEFP allocation seems to contribute relatively to equalizing education spending per student in Florida. The grant allocation from this foundation program seemed to be compatible with local poverty and local financial capacities. There were no substantial discrepancies in revenue and expenditure per student among school districts. The coefficients of variation of total expenditure and revenue per student were fairly small, although sometimes they were larger than previous years. Even though school districts that were more reliant on the FEFP grants were likely to have lower spending levels and the wealthiest school districts seemed to have the highest expenditures per student, the gaps were small.

Second, it is not clear whether the foundation grant could improve factors related to instruction quality. More affluent districts appeared to pay teachers more. Local districts that received larger grants seemed to have higher pupil–teacher ratios, lower teacher salaries, and less experienced teachers. This indicates a lower level of investment in teaching quality in poorer school districts. On average, however, the disparities among school districts for the ratio of pupil per teacher, teacher salaries, and teachers' experience were small. Additionally, the statistical evidence of the causal relationship between FEFP and the intermediate input variables is weak. Another point is the pupil–teacher ratio and teachers' experience did not look different in districts with higher

students in need. Teachers' salaries seemed higher in districts with a more significant proportion of students in language assistance programs. However, on average, teachers were likely to be paid less in districts with a higher percentage of students in special programs. As a result, the contribution of FEFP to an equal investment in the teaching process across districts and to groups of vulnerable students is not conclusive.

Third, FEFP had a minimal impact on student outcomes. The general graduation rate was not likely correlated with FEFP grants. Although average graduation rates across school districts were not much different, the pattern of graduation rates across school districts changed over the studied period. Graduation rates also became less positively associated with local own revenue over time. The differences do not appear to stem from grant aid distribution but education policy reform in the state.

Meanwhile, by subgroup, graduation rates of school districts with higher percentages of poor and non-White students appeared lower. The correlation between FEFP and the graduation rates of students in special groups is the only significant causal relationship in the analyses. However, interpreting this result requires caution. The graduation rate of students in special programs was likely to have a weak positive relationship with FEFP, partly due to the intervention of a higher ratio of pupils per teacher. While the statistical result shows a larger number of students in the class seemed helpful for the achievements of students with disabilities, the size of this effect was minute. Additionally, because a higher pupil–teacher ratio is not usually considered a desirable measure for improving teaching quality, this may be a special case that requires further explanation. As in the analysis by quintile, the graduation rate of students in special programs was highest in school districts with the most significant percentage of

students in the programs, although the general graduation rates were highest in school districts having the least students in this group. The causal relation in this case may result from a unique characteristic in the teaching and learning of the student group.

FEFP was not likely to improve the dropout rate. Over time, the disparities in average dropout rates among school districts were large and increasing, although the average rates were likely to decline. Dropout rates did not seem to have a clear pattern related to local own sources and percentages of specific student groups. There is evidence the school districts that received higher FEFP grants were more likely to have higher dropout rates. However, this connection was not very strong and partly generated because higher FEFP recipients were likely to have lower teacher salaries.

Fourth, the above analyses on the three variable groups illustrate a mild impact of FEFP on improving education access for students in need. The point can be further supported when looking at the FEFP allocation for those student groups. On average, the FEFP grants were not likely to be allocated in favor of school districts with higher proportions of non-White students or students in language assistance and special programs. Meanwhile, on average, the total expenditure per student was not higher in school districts with a more significant percentage of students in poverty, language assistance programs, special programs, or minority groups. Moreover, the average payments to teachers in school districts with a higher proportion of students in special programs were sometimes lower. At the same time, there is no other correlation between the variables in Group 2 and the percentage of students in vulnerable groups.

Overall, the program appears to have the most noticeable influence on equalizing the spending per student in Florida. It is not likely to have effects on the graduation rates

of school districts. Despite the state's efforts in adjusting the grant formula to support different groups of vulnerable students, the practical operation of the grant did not show valid evidence in promoting these groups in terms of grant allocation, teaching, learning process, or student achievement. Moreover, this examination of the program proves the connection between school funding and intermediate inputs such as pupil–teacher ratio, teacher salaries, and teacher experience. School districts receiving higher FEFP grants per student invested less in those factors, which seemingly contributed to their larger dropout rates and unexpectedly higher graduation rates in special programs. The mediating influences of pupil–teacher ratio and teacher salaries highlight the crucial role of the management processes and the investment strategies.

Table 13. Results of the FEFP Analyses

Variables	Choropleth Maps	The Coefficient of Variant	Patterns of Different Quintiles	Panel Data Regression
Group 1: Input Variables				
Total Expenditure per Student		Relatively small, stable Less stable than Total Revenue per Student Increased slightly recently	Not correlate with local sources and the proportion of poor students Not correlate with the proportion of students in needs Not much different across school districts The largest level often was in the quintile 5, however	DV: Negative relationship with FEFP share
Total Current Expenditure per Student	Not much different across districts			
Total Revenue per Student		Relatively mall More stable than Total Expenditure per Student		
FEFP per Student	Stable patterns over years and relevant with districts' poverty situation Not closely correlate with teacher salaries Likely to contribute to equal spending		Inversely correlates with local sources and the percentage of poor students Not always higher in districts with larger percentages of students in needs (except quintile 5 of special needs)	IV: Positively correlates with Pupil-Teacher Ratio, Graduation Rate of Students Enrolled in Special Programs, Drop-out Rate IV: Negatively correlates with Average Teacher Salaries, Teachers' Average Years of Experience
FEFP share				IV: Negative relationship with Total Expenditure per Student

Variables	Choropleth Maps	The Coefficient of Variant	Patterns of Different Quintiles	Panel Data Regression
Group 2: Intermediate Input Variables				
Pupil-Teacher Ratio		Small	Not much different across districts No relationship with local sources and characteristics of student groups	DV: Positive correlation with FEFP (small coefficient) IV: Positive correlation with the graduate rate of students in special programs Mediator: FEFP → Graduate Rate of Students in Special Programs
Average Teacher Salaries	Stable patterns over the years Not closely correlates with FEFP per Student	Relatively small, larger than Pupil-Teacher Ratio and Teachers' Average of Experience	Inversely correlates with local sources and proportion of poor students Positively associated with the proportion of students in langue assistance programs No relationship with the percentage of nonwhite students Negatively associated with the number of students in special programs.	DV: Slight negative correlation with FEFP IV: Negative correlation with Drop-out Rate Mediator: FEFP→Drop-out Rate
Teachers' Average Years of Experience		The smallest value, compared to two other variables in group 2	Not much different across districts No relationship with local sources and characteristics of student groups	DV: Slight negative correlation with FEFP

Variables	Choropleth Maps	The Coefficient of Variant	Patterns of Different Quintiles	Panel Data Regression
Group 3: Output Variables				
Graduation Rate	No clear trends over the years No correlated patterns with FEFP per Student Likely to be affected by policy reforms in the period	Much smaller than Drop-out Rate	Less positively associated with local sources over time Inversely correlates with the proportion of students in poverty Slightly negative association with the proportion of nonwhite students and students in special programs (highest in quintile 1) No relationship with the percentage of students in language assistance programs	No relationship with FEFP
Graduation Rate of Economically Disadvantaged Students			Not correlate with local sources Inversely correlates with the proportion of economically disadvantaged students	No relationship with FEFP
Graduation Rate of Nonwhite Students			Not correlate with local sources Inversely correlates with the proportion of nonwhite students	No relationship with FEFP
Graduation Rate of Students Enrolled in Special Programs			Not correlate with local sources Tended to have a positive correlation with the proportion of students in special programs Highest in quintile 5	DV: Slight positive correlation with FEFP, with the mediation of Pupil-Teacher Ratio
Graduate Rate of Students Enrolled in Programs of Language Assistance			Not correlate with local sources Not associated with the percentage of students in language assistance programs The values of quintile 1 of the student group were much lower than other quintiles	No relationship with FEFP

Variables	Choropleth Maps	The Coefficient of Variant	Patterns of Different Quintiles	Panel Data Regression
Drop-out Rate		Large A tendency to increase	Declines over time Not correlate with local sources and proportion of different student groups Highest in districts with largest shares of students in poverty	DV: Slight positive correlation with FEFP, with the mediation of Average Teacher Salaries

Results

The impact of FEFP and RttT fundings on the proportion of different spending categories of school districts (Model 1) are presented in Table 14 and Table 15. FEFP seemed to positively affect most spending items in the unconditional models, except community services and debt service (no effects, Columns 13 and 22) and capital outlay (a negative effect, Column 19). School districts that relied more on the FEFP funding were likely to spend larger proportions of their budget on instruction-related items and total current expenditures and have lower budget percentages of capital spending. The availability of the RttT funding was not likely to change the spending patterns of the school districts. It only induced an immediate decrease of about 2% in employee salaries in the first year of RttT implementation (Column 25). In the interaction models, the effect of FEFP was similar. The grants from RttT appeared to affect spending on instruction support services (Column 6) and turned to no effect on salaries (Column 27).

RttT was likely to moderate all significant relationships between the FEFP funding and spending items, except expenditures on community services, debt services, and employee benefits. The interaction terms in the case of current expenditures, especially instruction-related items and salaries, are negative. The availability of RttT appeared to make these expenditures less reliant on FEFP funding. When receiving RttT money, school districts with larger shares of the FEFP funding became less likely to increase their proportion of spending on instruction-related items and salaries. For example, it was possible that the availability of the RttT funding gradually led to a 0.03 percentage point decline in the effect of the state aid on instruction spending each year

after 2010. However, the interaction term for capital outlay is positively significant (Columns 20 and 21). The availability of the RttT funding was likely to lead to a 0.04 percentage point increase in the relationship between the state aid and the proportion of capital spending each year after 2010. School districts that received higher percentages of state aid tended to increase their capital spending percentage when they participated in RttT.

The influences of the federal and state aid on expenditures per student of different spending categories (Model 1) are shown in Table 16 and Table 17. FEFP funding only has significant correlations with the capital outlay and community services (Columns 13 and 19). School districts with a higher share of the state aid appeared to have lower levels of expenditures per student on capital and community services (0.06 and 0.03 percentage points, respectively). However, the RttT has only a moderation effect on the relationship between the state aid and capital outlay (Columns 20 and 21). Participation in RttT seemed to improve the correlation between the FEFP funding and capital expenditure per student. The availability of the RttT financing was likely to gradually lead to a 0.004 percentage point increase in the relationship between the state aid and the proportion of capital spending each year after 2010. School districts with a larger share of the state aid tended to increase their capital expenditure per student when joining RttT.

Additionally, the coefficients of the pre-trend variable (Model 1-2) in all cases are insignificant, suggesting a common trend of the treatment and control groups of school districts, hence a valid DID estimation.

Model 2 (Table 18) shows no interaction effects of RttT funding per student on the relationship between FEFP funding share and spending categories in terms of relative and absolute values.

Table 14. Model 1. Interactive Effects on the Proportion of Expenditure Categories (1)

Model 1. Interactive Effects on the Proportion of Expenditure Categories (1)															
	Instruction			Instruction Support Services			General Support Services			Total Instruction Expenditures			Community Services		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FEFP share	0.3704***	0.4206***	0.4404***	0.0722**	0.0785**	0.0849**	0.2505***	0.2472***	0.2596***	0.6931**	0.7463***	0.7849***	0.0044	0.0044	0.0044
	(0.1023)	(0.0963)	(0.0964)	(0.0271)	(0.0262)	(0.0264)	(0.0571)	(0.0539)	(0.0529)	(0.1676)	(0.1603)	(0.1590)	(0.0051)	(0.0050)	(0.0050)
Level change	-0.0438	2.5846	0.6712	-2.0685	-1.7384	-2.3571*	-0.7989	-0.9743	-2.1839	-2.911	-0.1282	-3.8698	0.0958	0.0967	0.0981
	(1.0369)	(1.4399)	(1.6072)	(1.0412)	(1.0518)	(1.0717)	(0.6306)	(1.1498)	(1.1394)	(1.5465)	(2.3611)	(2.6010)	(0.0988)	(0.1044)	(0.0996)
Slope change	0.5582	0.7467	1.4846**	0.4936	0.5173	0.7559**	0.1655	0.1530	0.6195	1.217	1.4169	2.8600**	0.0004	0.0005	-0.0001
	(0.4831)	(0.4906)	(0.5554)	(0.2630)	(0.2659)	(0.2732)	(0.4021)	(0.4107)	(0.4377)	(0.9621)	(0.9647)	(1.0357)	(0.0250)	(0.0252)	(0.0306)
FEFP share* Level change		-0.1090**	-0.0397		-0.0137	0.0087		0.0073	0.0511		-0.1154*	0.0200		-0.0000	-0.0001
		(0.0329)	(0.0367)		(0.0093)	(0.0102)		(0.0320)	(0.0328)		(0.0569)	(0.0640)		(0.0021)	(0.0021)
FEFP share* Slope change			-0.0263*			-0.0085**			-0.0166**			-0.0514**			0.0000
			(0.0101)			(0.0025)			(0.0054)			(0.0156)			(0.0005)
R2	0.4155	0.4401	0.4490	0.2379	0.2451	0.2625	0.2831	0.2834	0.2934	0.3972	0.4076	0.4206	0.0848	0.0848	0.0848
adj. R^2	0.3991	0.4235	0.4319	0.2165	0.2227	0.2396	0.2629	0.2622	0.2714	0.3802	0.3901	0.4026	0.0591	0.0577	0.0564
N	731	731	731	731	731	731	731	731	731	731	731	731	731	731	731

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 15. Model 1. Interactive Effects on the Proportion of Expenditure Categories (2)

Model 1. Interactive Effects on the Proportion of Expenditure Categories (2)															
	Current Expenditures			Capital Outlay			Debt Service			Salaries			Employee Benefits		
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
FEFP share	0.6975*** (0.1698)	0.7507*** (0.1629)	0.7893*** (0.1617)	-0.7090*** (0.1653)	-0.7753*** (0.1593)	-0.8089*** (0.1601)	0.0115 (0.0348)	0.0246 (0.0361)	0.0196 (0.0348)	0.4363** * (0.0924)	0.4557*** (0.0904)	0.4740*** (0.0907)	0.1362*** (0.0288)	0.1446*** (0.0281)	0.1491*** (0.0282)
Level change	-2.8154 (1.5723)	-0.0315 (2.3807)	-3.7717 (2.6188)	1.9760 (1.7615)	-1.4904 (2.7072)	1.7658 (2.8569)	0.8394 (0.9532)	1.5219 (1.0946)	2.0059 (1.0414)	-2.1656* (1.0356)	-1.1496 (1.4131)	-2.9220 (1.5286)	-0.4814 (0.5498)	-0.0412 (0.6213)	-0.4692 (0.6594)
Slope change	1.2178 (0.9634)	1.4174 (0.9663)	2.8599** (1.0395)	-1.1955 (0.8959)	-1.4441 (0.9003)	-2.6999** (0.9651)	-0.0223 (0.1106)	0.0267 (0.1122)	-0.1600 (0.1582)	0.5150 (0.6159)	0.5878 (0.6195)	1.2714 (0.6671)	0.4053 (0.2271)	0.4369 (0.2278)	0.6019* (0.2500)
FEFP share* Level change		-0.1155* (0.0570)	0.0200 (0.0642)		0.1438* (0.0655)	0.0259 (0.0705)		-0.0283 (0.0171)	-0.0458* (0.0181)		-0.0421 (0.0334)	0.0220 (0.0357)		-0.0183 (0.0115)	-0.0028 (0.0129)
FEFP share* Slope change			-0.0513** (0.0157)			0.0447** (0.0140)			0.0066 (0.0049)			-0.0243* (0.0100)			-0.0059 (0.0034)
R^2	0.4013	0.4115	0.4243	0.4171	0.4325	0.4419	0.0472	0.0564	0.0596	0.3714	0.3756	0.3843	0.4261	0.4323	0.4364
adj. R^2	0.3844	0.3941	0.4064	0.4007	0.4157	0.4246	0.0204	0.0285	0.0304	0.3537	0.3571	0.3652	0.4099	0.4155	0.4189
N	731	731	731	731	731	731	731	731	731	731	731	731	731	731	731

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 16. Model 1. Interactive Effects on Expenditure per Student (1)

Model 1. Interactive Effects on Expenditure per Student (1)															
	Instruction			Instruction Support Services			General Support Services			Total Instruction Expenditures			Community Services		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FEFP share	-0.000	-0.0008	-0.0008	-0.0008	-0.0013	-0.0011	0.0005	-0.0008	-0.0008	-0.0004	-0.0009	-0.0009	-0.0275*	-0.0236	-0.0216
	(0.0008)	(0.0007)	(0.0007)	(0.0016)	(0.0017)	(0.0017)	(0.0012)	(0.0010)	(0.0010)	(0.0006)	(0.0006)	(0.0006)	(0.0126)	(0.0124)	(0.0124)
Level change	-0.014	-0.0214	-0.0135	-0.1690*	-0.1931*	-0.2104*	-0.0394**	-0.1035***	-0.0991***	-0.0433*	-0.0708***	-0.0678**	0.0853	0.2913	0.1012
	(0.0167)	(0.0184)	(0.0189)	(0.0755)	(0.0784)	(0.0809)	(0.0148)	(0.0278)	(0.0267)	(0.0171)	(0.0196)	(0.0210)	(0.1279)	(0.2355)	(0.1629)
Slope change	0.005	0.0051	0.0020	0.0306	0.0288	0.0355*	-0.0022	-0.0068	-0.0086	0.0059	0.0040	0.0029	0.1612	0.1760	0.2493
	(0.0076)	(0.0075)	(0.0084)	(0.0154)	(0.0154)	(0.0168)	(0.0057)	(0.0066)	(0.0077)	(0.0046)	(0.0045)	(0.0054)	(0.1013)	(0.1031)	(0.1278)
FEFP share* Level change		0.0003	0.0000		0.0010	0.0016		0.0027**	0.0025**		0.0011**	0.0010*		-0.0085	-0.0017
		(0.0003)	(0.0003)		(0.0009)	(0.0011)		(0.0009)	(0.0009)		(0.0004)	(0.0004)		(0.0091)	(0.0065)
FEFP share* Slope change			0.0001			-0.0002			0.0001			0.0000			-0.0026
			(0.0001)			(0.0002)			(0.0001)			(0.0001)			(0.0025)
R2	0.8281	0.8288	0.8294	0.5749	0.5779	0.5790	0.6227	0.6542	0.6543	0.8401	0.8489	0.8490	0.0573	0.0627	0.0659
adj. R^2	0.8233	0.8237	0.8241	0.5629	0.5654	0.5659	0.6121	0.6439	0.6436	0.8356	0.8445	0.8443	0.0307	0.0349	0.0369
N	731	731	731	731	731	731	731	731	731	731	731	731	731	731	731

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 17. Model 1. Interactive Effects on Expenditure per Student (2)

Model 1. Interactive Effects on Expenditures per Student (2)															
	Current Expenditures			Capital Outlay			Debt Service			Salaries			Employee Benefits		
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
FEFP share	-0.0004 (0.0006)	-0.0010 (0.0006)	-0.0010 (0.0006)	-0.0635*** (0.0139)	-0.0625*** (0.0139)	-0.0651*** (0.0142)	-0.0250 (0.0264)	-0.0224 (0.0264)	-0.0231 (0.0252)	-0.0001 (0.0008)	-0.0008 (0.0007)	-0.0009 (0.0007)	0.0006 (0.0010)	-0.0001 (0.0009)	-0.0003 (0.0009)
Level change	-0.0422* (0.0169)	-0.0698*** (0.0195)	-0.0667** (0.0209)	0.1882 (0.1642)	0.2440 (0.2362)	0.4982 (0.2533)	0.1994 (0.3056)	0.3368 (0.3315)	0.4096 (0.2613)	-0.0517* (0.0214)	-0.0884*** (0.0240)	-0.0750** (0.0260)	-0.0440* (0.0213)	-0.0810** (0.0270)	-0.0612* (0.0283)
Slope change	0.0060 (0.0048)	0.0040 (0.0046)	0.0028 (0.0056)	-0.0903 (0.0909)	-0.0863 (0.0916)	-0.1843 (0.0967)	-0.1697 (0.0997)	-0.1598 (0.0997)	-0.1879 (0.1080)	0.0040 (0.0073)	0.0014 (0.0071)	-0.0038 (0.0081)	0.0170* (0.0074)	0.0144 (0.0073)	0.0067 (0.0098)
FEFP share* Level change		0.0011** (0.0004)	0.0010* (0.0004)		-0.0023 (0.0060)	-0.0115 (0.0067)		-0.0057 (0.0060)	-0.0083 (0.0070)		0.0015*** (0.0004)	0.0010 (0.0005)		0.0015** (0.0006)	0.0008 (0.0006)
FEFP share* Slope change			0.0000 (0.0001)			0.0035* (0.0017)			0.0010 (0.0020)			0.0002 (0.0001)			0.0003 (0.0002)
R^2	0.8394	0.8484	0.8485	0.5302	0.5306	0.5358	0.0608	0.0624	0.0627	0.8251	0.8383	0.8395	0.8083	0.8156	0.8170
adj. R^2	0.8348	0.8439	0.8438	0.5170	0.5167	0.5214	0.0343	0.0346	0.0335	0.8201	0.8335	0.8346	0.8029	0.8101	0.8113
N	731	731	731	731	731	731	731	731	731	731	731	731	731	731	731

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 18. Model 2. Interactive Effects on Expenditure Categories

Model 2. Interactive Effects on Expenditure Categories										
	Instruction	**Instruction Support Services**	**General Support Services**	**Total Instruction Expenditures**	**Community Services**	**Current Expenditures**	**Capital Outlay**	**Debt Service**	**Salaries**	**Employee Benefits**
Proportion of Expenditure Categories										
FEFP share	0.2823 (0.1906)	0.0452 (0.0436)	0.2325* (0.0912)	0.5600 (0.3024)	-0.0043 (0.0049)	0.5557 (0.3044)	-0.7459** (0.2624)	0.1902 (0.1059)	0.3777* (0.1724)	0.0966* (0.0472)
RttT per student (log)	-0.2019 (0.2957)	-0.0031 (0.0914)	-0.0385 (0.1661)	-0.2435 (0.4786)	-0.0020 (0.0214)	-0.2455 (0.4801)	-0.1655 (0.4117)	0.4111 (0.2175)	-0.0218 (0.3017)	-0.0124 (0.0831)
FEFP share*RttT per student (log)	-0.0005 (0.0104)	0.0001 (0.0027)	0.0008 (0.0064)	0.0004 (0.0169)	-0.0010 (0.0009)	-0.0006 (0.0171)	0.0214 (0.0214)	-0.0208 (0.0131)	-0.0017 (0.0103)	-0.0002 (0.0027)
R^2	0.1502	0.1451	0.2236	0.1681	0.0881	0.1681	0.2158	0.0993	0.2422	0.4279
adj. R^2	0.1132	0.1079	0.1898	0.1319	0.0485	0.1319	0.1817	0.0601	0.2092	0.4030
N	361	361	361	361	361	361	361	361	361	361
Expenditures per Student										
FEFP share	-0.0024* (0.0011)	-0.0045 (0.0028)	-0.0002 (0.0016)	-0.0019 (0.0009)	-0.1023*** (0.0256)	-0.0020* (0.0009)	-0.0843** (0.0281)	0.0125 (0.0653)	-0.0014 (0.0013)	-0.0025 (0.0019)
RttT per student (log)	-0.0021 (0.0032)	0.0009 (0.0102)	0.0014 (0.0040)	-0.0007 (0.0032)	-0.0511 (0.0591)	-0.0008 (0.0031)	0.0064 (0.0419)	0.0388 (0.0980)	0.0018 (0.0039)	-0.0005 (0.0059)
FEFP share*RttT per student (log)	0.0000 (0.0001)	0.0001 (0.0003)	0.0000 (0.0002)	0.0000 (0.0001)	0.0011 (0.0020)	0.0000 (0.0001)	0.0006 (0.0017)	-0.0097 (0.0060)	0.0000 (0.0001)	0.0001 (0.0002)
R^2	0.7828	0.4474	0.4869	0.7656	0.1718	0.7654	0.2510	0.1286	0.6641	0.8146
adj. R^2	0.7734	0.4233	0.4646	0.7554	0.1358	0.7552	0.2185	0.0907	0.6495	0.8066
N	361	361	361	361	361	361	361	361	361	361

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Findings and Discussions

The investigation across school districts in Florida displayed the influences of the RttT grant on the relationship between FEFP funding and two main spending categories: Current expenditures (instruction-related items and salaries) and capital outlay. When receiving the federal funding, school districts that are more reliant on the state aid tend to decrease their proportions of spending related to current expenditure, especially instruction spending (instruction expenditures, instruction support services, general support services) and salaries. However, this is not applied to the levels of spending per student in those spending categories. The federal funding also seemed not to affect the relationship between the state aid and other items of expenditures per student. Meanwhile, with the federal funding, school districts that require more financial support from the state (as a share of their budgets) can gradually raise their capital outlay, both in percentage and dollar amount per student. There is no evidence that the size of the federal grant affected the connection between the state funding and school district budgetary allocations.

CHAPTER 7. CASE STUDY

Miami-Dade School District

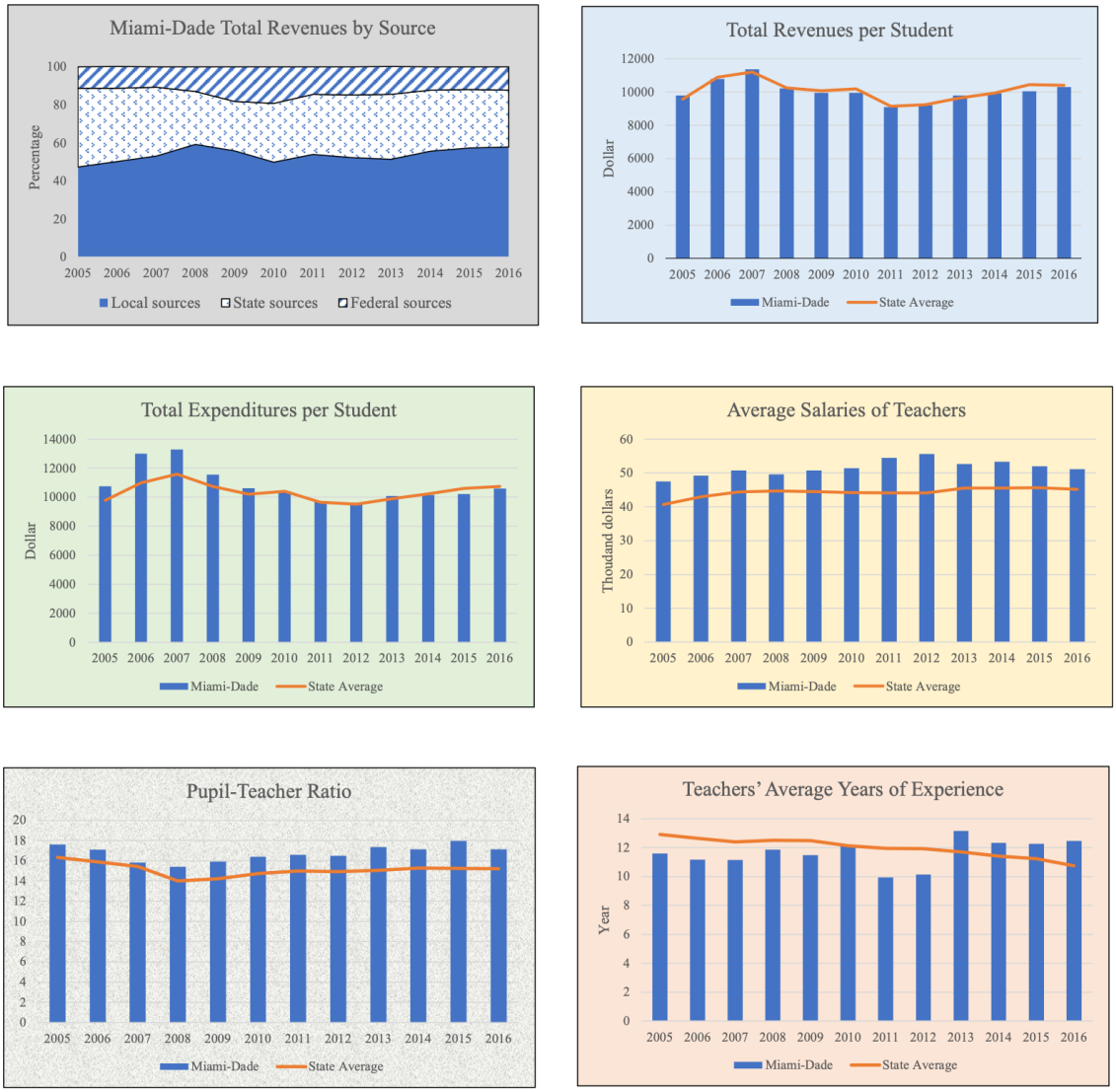
Data from the Florida Department of Education show that Miami-Dade is the largest school district in Florida by enrollment. It is also ranked first in the number of non-White students in the state. Moreover, among school districts participating in RttT in Florida, Miami-Dade received the greatest allocation (over 73 million dollars). This award was nearly twice as much as the funds distributed to Broward, the district receiving the second largest amount (Evergreen Solutions, 2015). Regarding FEFP, from 2005–2016, the proportions of FEFP money in total expenditure per student in Miami-Dade ranged from 14.5% to 32.1%, while the average level in the state was around 30%. Thus, the reliance of Miami-Dade on the state subsidy was not too high, possibly implying a greater latitude of local control. As a result, the examination of Miami-Dade could potentially provide a vivid image of the impact of the studied grants and a dynamic environment of local control at the same time.

Furthermore, Miami-Dade is the fourth largest school district in the US in terms of enrollment (Miami-Dade School District). It is the representative of Florida in the nationwide assessment of student achievements in large urban districts NAEP Trial Urban District Assessment (TUDA) conducted by the National Center for Education Statistics (NCES). The advantages of analyzing the case of Miami-Dade are its representative role in Florida and the possibility of making references to other school districts in other states.

Figure 19 displays some primary information on input factors of education service in Miami-Dade. The proportion of revenues from local sources in Miami-Dade increased

during the studied period, from approximately 47% in 2005 to over 57% in 2016. Revenues from federal sources fluctuated around 12% of total revenues, except for sharp rises in 2009 and 2010 (18.2% and 19.2%, respectively). Meanwhile, revenues from state sources showed a decreasing trend: about 41% of total revenues in 2006 and reduced to 30% in 2016. Total revenue per student of the Miami-Dade school district was comparable with the state's average level. Before 2010, the total expenditure per student of the school district was higher than the state average expenditure, especially in 2006 and 2007. However, the expenditure level stayed close to the average level of all school districts in the state after 2010. Similar to the overall trend in the state, both total revenue and expenditure per student in the school district peaked in 2007 and dipped in 2011. Miami-Dade school district paid their teachers higher than the state average level and also had more pupils per teacher in a class than the state average ratio. Last, while the average experience of teachers in the state seemed to reduce over time, it seemed to improve in recent years in Miami-Dade.

Figure 19. Miami-Dade Status



Step 1. Archival Analysis

Research Results

Student Achievement. Graduation rates in Miami-Dade had an upward trend during 2005–2016 (Figure 20). On average, the rate after 2010 was about 4% higher than that in the previous period (Table 19). However, after 2010, the increase slowed

(=−5.796, p<.05). Likewise, graduation rates in Palm Beach rose steadily during this period. After 2010, the growth also decreased with larger gaps than in Miami-Dade (=−6.023, p<.05).

The administration of reading and mathematics examinations in Florida in 2010 shifted from Florida Comprehensive Assessment Test (FCAT) to Florida Comprehensive Assessment Test 2.0 (FCAT 2.0). The test scores in 2010 were available in both measurements of FCAT and FCAT 2.0 (Figure 21 and Figure 22). In general, the test scores in Miami-Dade saw a rise in the studied period and also after 2010. During 2010–2013, the test scores sometimes experienced stabilization or a decrease, such as in reading scores for Grade 10 and in mathematics scores for Grade 3, Grade 7, and Grade 8. Compared to Palm Beach, test scores in Miami-Dade often increased faster (reading tests for Grade 5, Grade 6, and Grade 9, and mathematics tests for Grade 3 and Grade 5). Miami-Dade saw a rise when test scores in Palm Beach stabilized or reduced (reading tests for Grade 3, Grade 4, Grade 7, and Grade 8, and mathematics tests for Grade 6). Last, test scores in Miami-Dade showed a more stable trend when test scores in Palm Beach decreased (reading tests for Grade 7 and mathematics tests for Grade 7).

In 2010, states started using federal 4-year cohort graduation rates, facilitating comparison across states. Miami-Dade experienced a more significant improvement from 2010–2016 than Texas's two urban school districts. Graduation rates in Miami-Dade increased considerably from 71.27% in 2010 to 80.67% in 2016. Meanwhile, graduation rates in Austin and Houston experienced a marginal rise around the high level of over 90% (Figure 23).

The NCES publishes the NAEP results in every 2 years (Figures 24, 25 and 26). Miami-Dade was likely to improve better than Austin and Houston. Since 2011, average scores in mathematics and reading tests for Grade 4 steadily rose in Miami-Dade while stable or slightly reduced in Austin and Houston. The trends in mathematics and readings tests for Grade 8 in the three school districts looked generally stable during 2011–2017.

The education access and performance of students in vulnerable groups showed improvement. In the studied period, the graduation rates of students in vulnerable groups, including students with disabilities, economic disadvantages, or English language support, increased, especially the rates of students in English language support programs (Figure 27). At the same time, dropout rates steadily decreased from 6.7% to 2.69% from 2005–2014.

Figure 20. Graduation Rates of Miami-Dade and Palm Beach

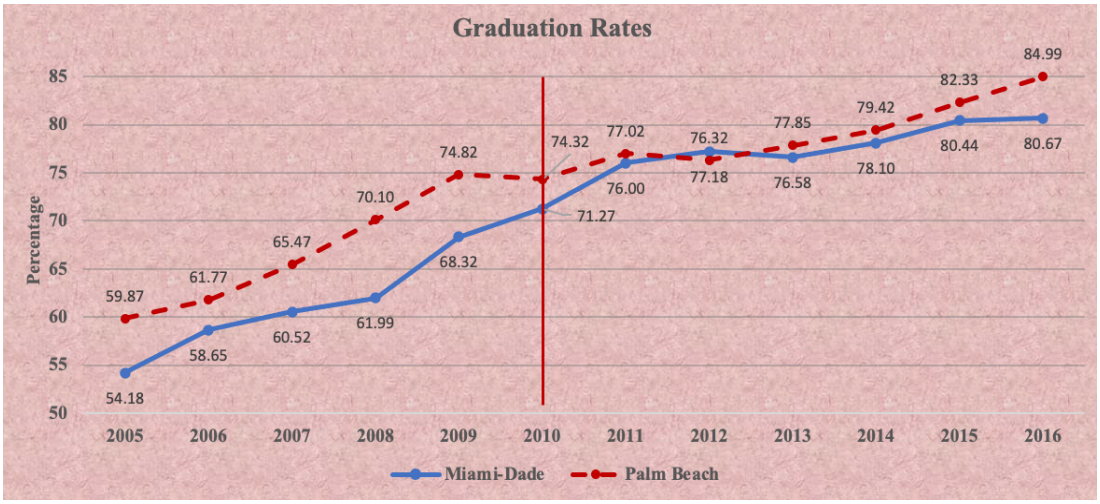


Table 19. Graduation Rates of Miami-Dade and Palm Beach

	Miami-Dade	Palm Beach
Time	6.215**	4.965**
Intervention	4.103*	-0.203
Post-trend	-5.796*	-6.023*
Total Current Spending (log)	7.673	-33.944
Teachers' Years of Experience	-1.641*	-0.730
Poverty	-0.535	-0.230
Total Students (log)	245.609*	188.213
Constant	-3134.254*	-1898.084
N	12	12
R-sq	0.998	0.996
Adj. R-sq	0.995	0.988

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Figure 21. Reading Test Scores of Miami-Dade and Palm Beach

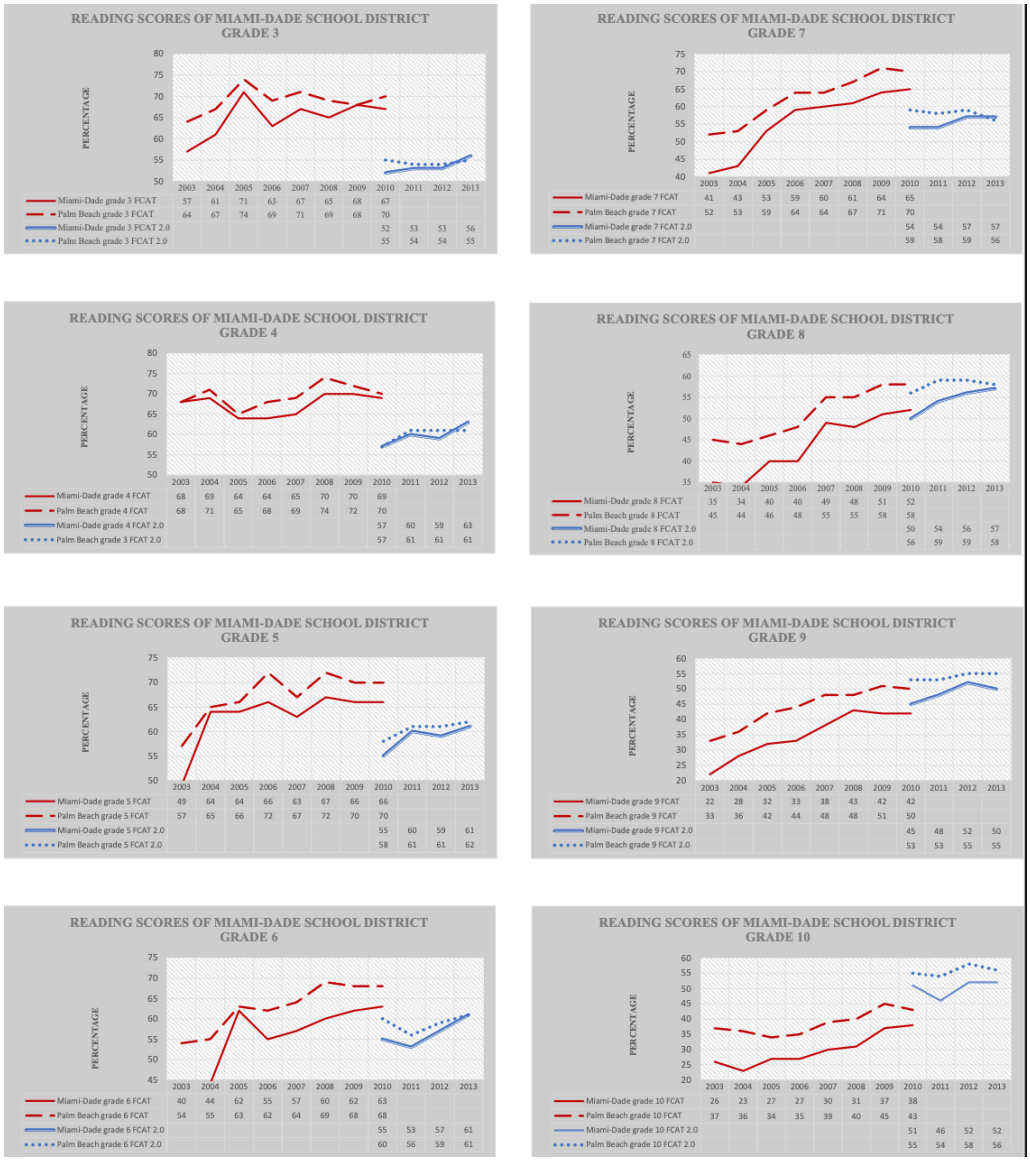
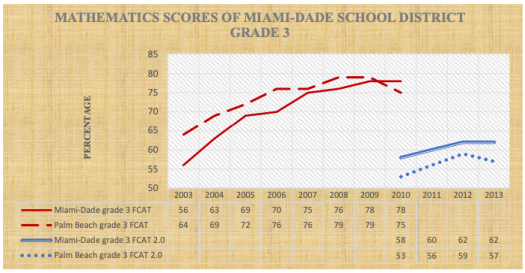
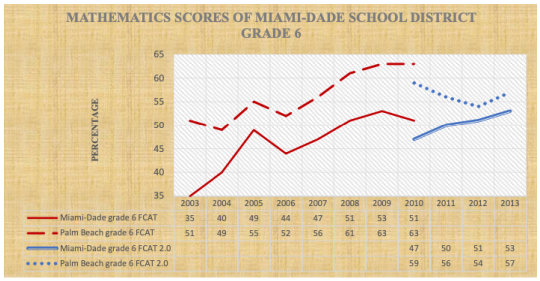
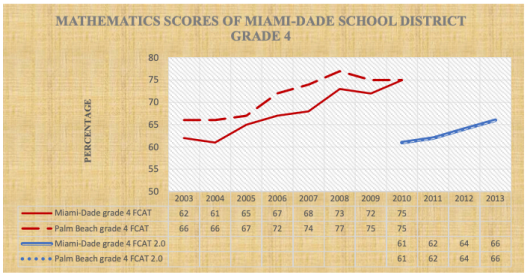
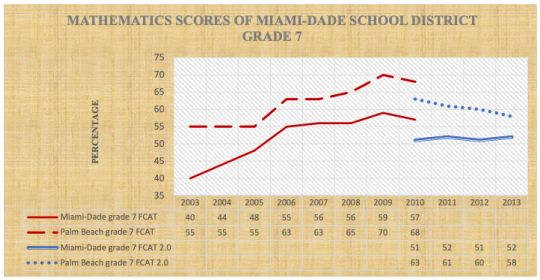


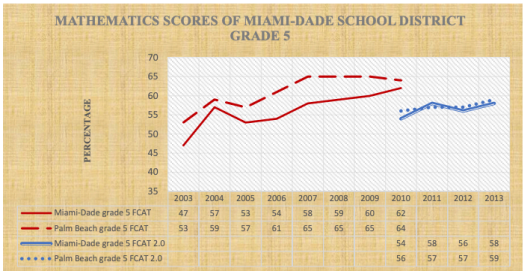
Figure 22. Mathematics Test Scores of Miami-Dade and Palm Beach











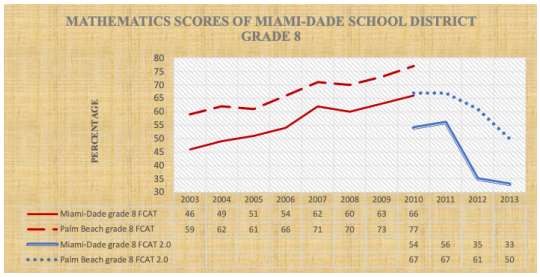


Figure 23. Graduation Rates Miami-Dade, Houston, and Austin

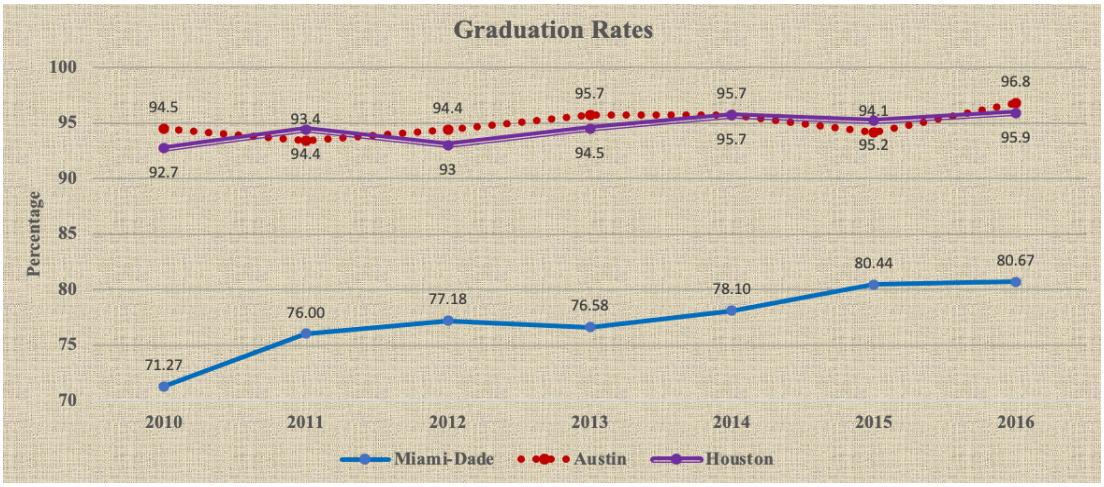


Figure 24. Average Test Scores in NAEP Assessment – Miami- Dade

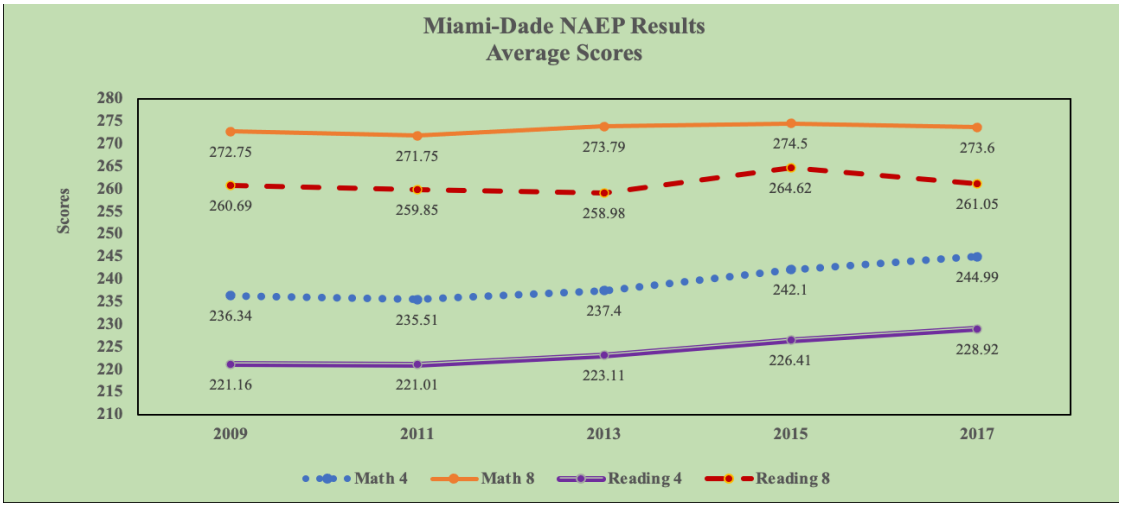


Figure 25. Average Test Scores in NAEP Assessment – Austin

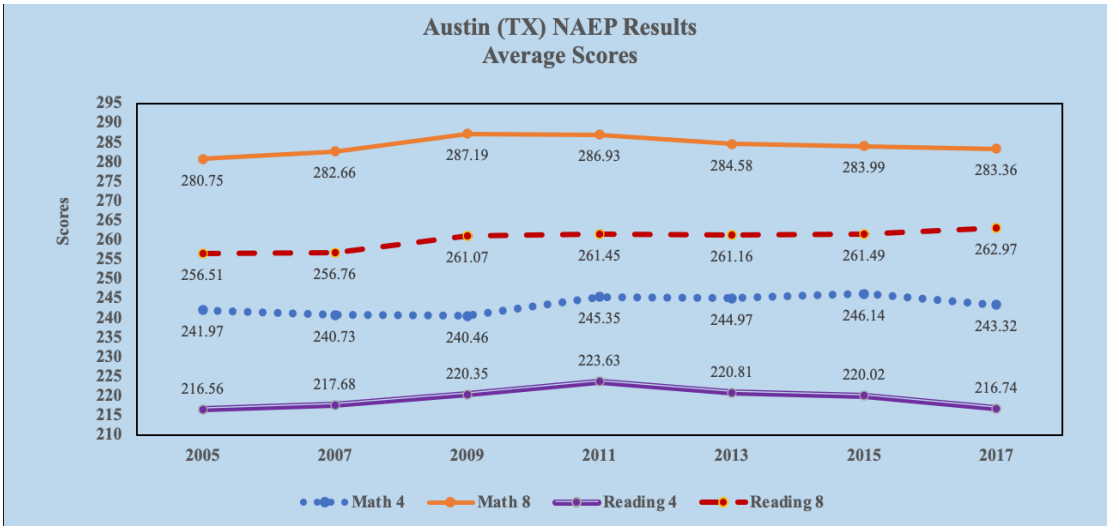


Figure 26. Average Test Scores in NAEP Assessment – Houston

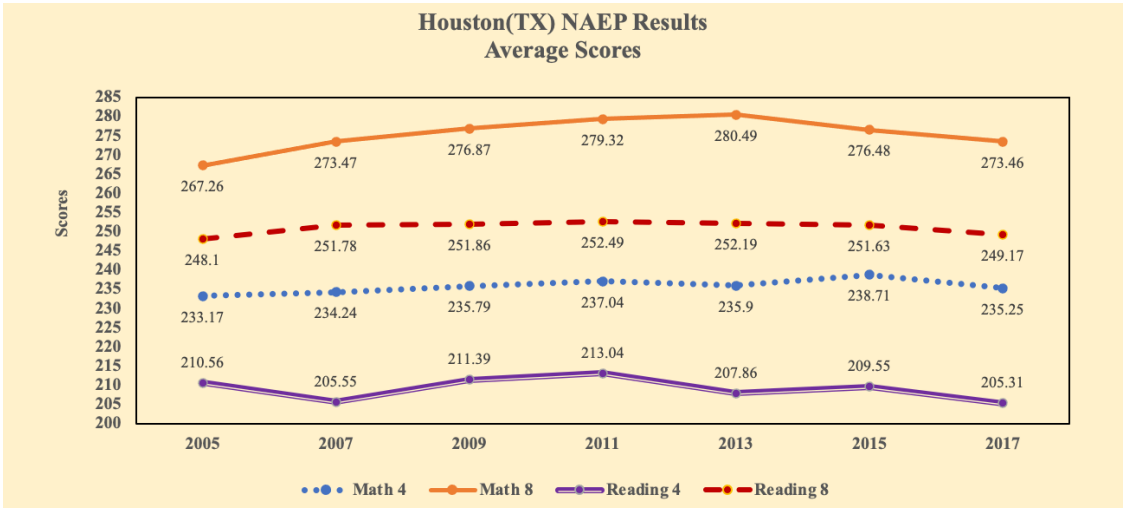
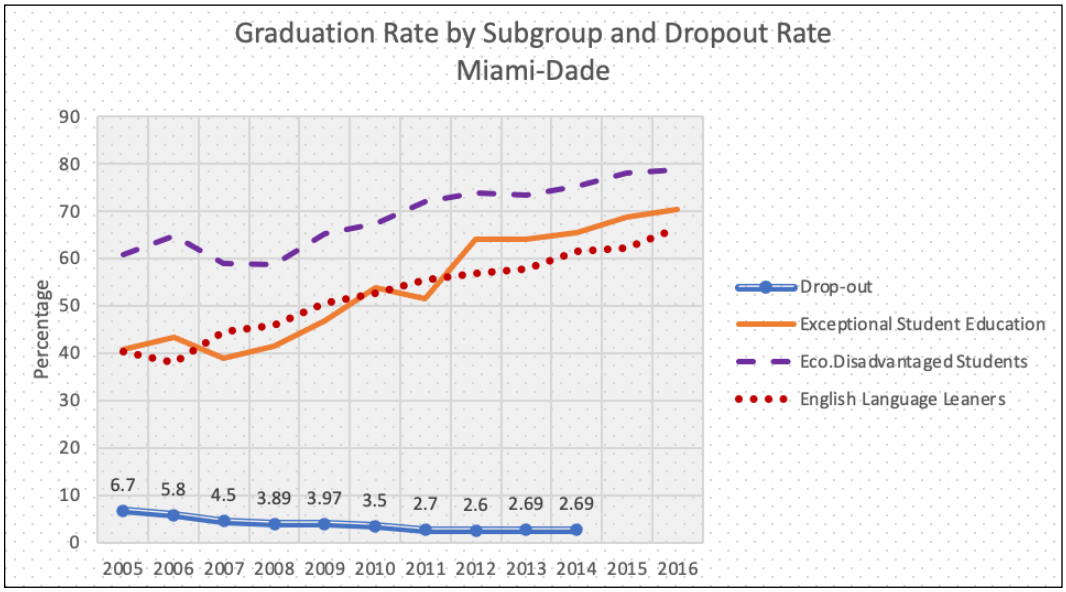


Figure 27. Graduation Rates by Sub-Group and Drop-out Rates in Miami-Dade

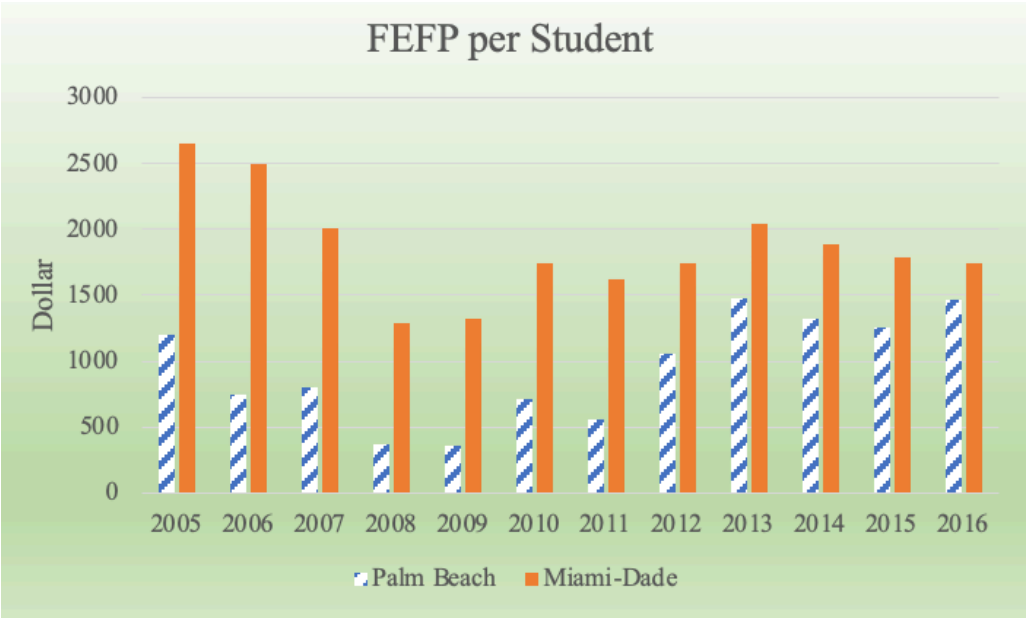


Financial Management. FEFP funding proportion in total revenues in Miami-Dade decreased steadily from about 27% in 2005 to around 12% in 2008. It then increased slowly to 17% in 2010 before staying relatively stable in the range of 17%–20% (Figure 28). Meanwhile, the proportion of expenditures on instruction, general support services, total instruction expenditures, current expenditures, and salaries show a nearly similar trend during 2005–2015 (Figure 29). The spending percentages reduced in 2006 and started an upward trend until 2012 or 2013 before gradually decreasing during the rest of the period. Spending on instruction support services fluctuated around 7.5%–8.5% during this period. Last, the capital outlay percentage increased from 16% in 2005 to 22% in 2006. It then decreased sharply and reached 6% in 2015. This pattern also applied to the capital expenditure per student (Figure 30). Thus, there is no clear evidence of a positive relationship between FEFP and capital and current spending items in Miami-Dade, as well as the interaction effect of the federal grant.

Miami-Dade has greater FEFP funding than Palm Beach in absolute and relative values (Figure 28). Palm Beach experienced nearly the same trends as Miami-Dade in percentages of current expenditure items (Figure 29). However, it was not always that Miami-Dade had higher spending levels than Palm Beach (which means a positive relationship with FEFP funding). Capital outlay of Palm Beach showed a similar trend in both values of percentage and dollar amount per student (Figures 29 and 30). Before 2010, the capital outlay of Palm Beach was higher than that of Miami-Dade, seemingly reflecting a negative effect of FEFP funding. However, in 2011, the capital spending of Palm Beach became lower than that of Miami-Dade and this negative gap grew even

larger in 2014 and 2015. This trend after 2010 seemed to follow the expectation of increased capital outlay spending in a school district when it implemented FEFP.

Figure 28. FEFP in Miami Dade and Palm Beach



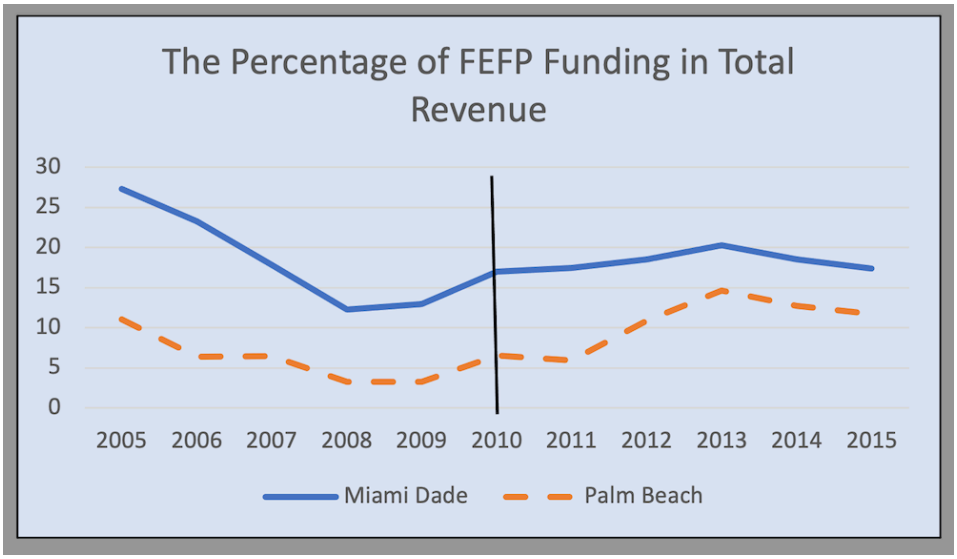


Figure 29. Spending Patterns in Miami-Dade and Palm Beach – Proportion

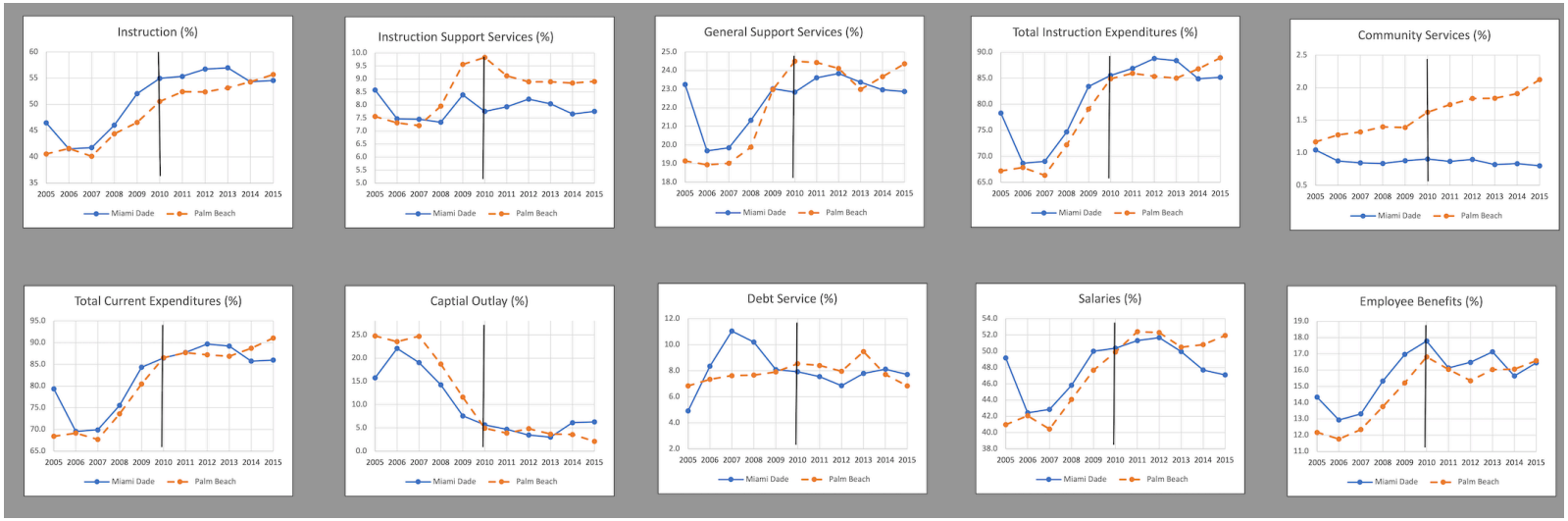
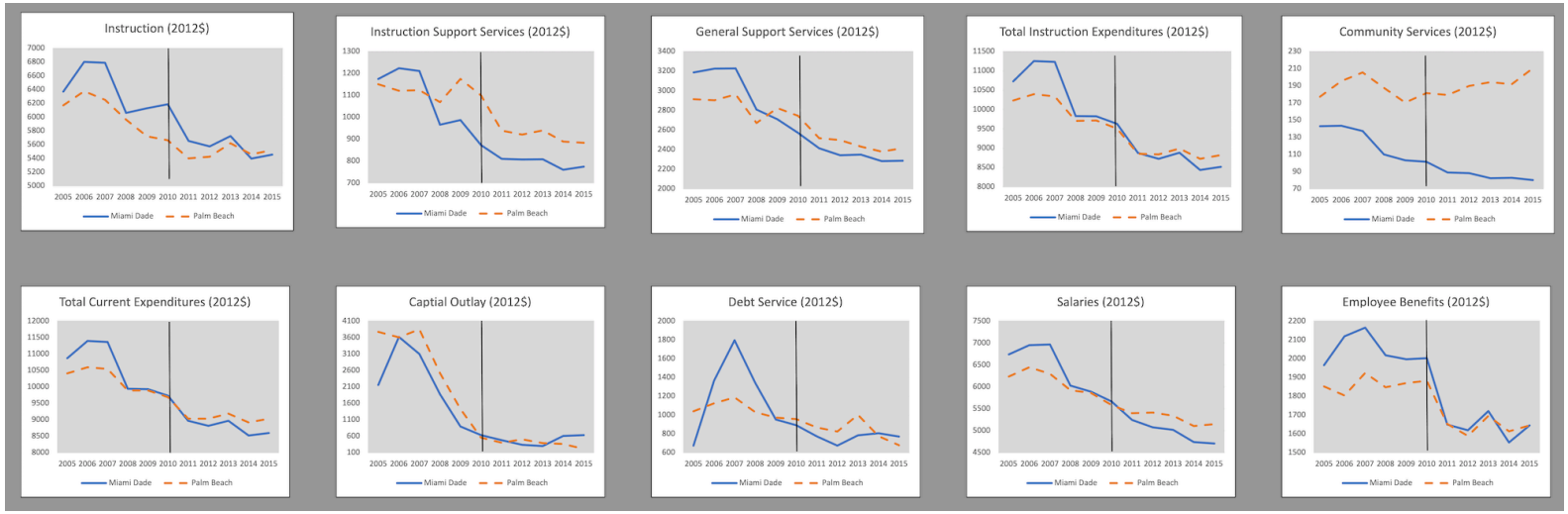


Figure 30. Spending Patterns in Miami-Dade and Palm Beach - Expenditures per Student



Findings and Discussion

The analysis of Miami-Dade's performance and expenditures is not entirely consistent with the conclusions of the statewide research. Miami-Dade achieved higher education improvement than urban school districts in Texas after 2010. However, it was not a significant gap: NAEP's test scores in Miami-Dade are only higher for Grade 4. At the same time, graduation rates in Houston and Austin were already higher than 90%, resulting in more challenges for these districts to reach more substantial progress. Moreover, while research shows no evidence that RttT-participating districts outperformed the non-participating local agencies in Florida, graduation rates and test scores in Miami-Dade were better than in Palm Beach. In contrast to the conclusions of the FEFP's impact, Miami-Dade kept making progress in the graduation rates of students in vulnerable groups and dropout rates.

The grant interaction effect was not clearly shown when observing Miami-Dade and Palm Beach. Current expenditures, specifically instruction-related items and salaries, did not show the expected trends as in the statewide analyses which show a positive relationship with the FEFP funding. However, when comparing Miami-Dade and Palm Beach, the capital spending pattern seemingly reflected a negative correlation between FEFP funding and the influence of RttT funding on the relationship after 2010.

In summary, the studied grant programs in Miami-Dade school districts appeared to affect the district's performance positively. Although the availability of the two transfers at the same time was likely to affect spending relating to instructional activities and capital spending in school districts, the spending patterns in Miami-Dade did not provide strong evidence for that estimation. These research outcomes illustrate the

differences between average assessments and the specific situations of individual school districts regarding the impact of education grant programs. It highlights the need for further research to understand the disparities in reliance on grant transfers of different school districts as well as determinants in the successes of grant implementation in local agencies.

Step 2. The Survey and Interviews

Purposes of the Qualitative Data Collection and Analysis

The survey and interviews aim at three targets: (1) to gain knowledge on how local officials assess the impact of the studied grants on education performance and financial management, (2) to check and explain the results of the archival analyses, and (3) to gain new insights that the extant literature and archival analyses could not reveal. Survey questions and discussions with state and school district officials focus on two main topics of grants' impact on education achievement and expenditure. In addition to obtaining information on officials' views on the impact of the studied programs in the state and Miami-Dade, the research is interested in seeking feedback about the possible reasons for the strong performance of Miami-Dade. This step uses the knowledge from the statewide program assessments in Phase 1 to design the survey and facilitate the discussions about the program implementation and financial management in the Miami-Dade district. Questions of the survey and guidelines for discussion with state and school districts officials are enclosed in Appendixes 11 and 12.

Data collection

The survey was developed on the Qualtrics website, which provides a link for research participants to access the survey (Appendix 11). An invitation to participate in

the survey with the Qualtrics link was sent via email to 25 relevant officials in the Miami-Dade school district. The officials are managers or staff working in district units responsible for financial management, intergovernmental programs, accountability and academic improvement, and program assessment. The survey was sent to officials at both central and regional levels of the school district. The response rate of the survey is 16%. The research uses Qualtrics' data analysis and report tools to analyze the survey results.

Among the 25 officials invited to participate in the survey, invitation emails for the individual interviews were sent to nine district officials whose work was the most related to the studied programs. One district official who has worked for over 10 years in the school district agreed to discuss further the issues in the survey through email. Besides providing comments and more detailed answers to the survey, the official sent some relevant materials, which the researcher greatly appreciated. The second interviewee also had over 10 years of working experience in the school district. This interview was conducted via phone. The survey questions were used as an outline for the discussion. The interviewee provided straightforward answers with detailed explanations and examples, which was significantly helpful for the researcher to understand the context and gain insights into the issues.

Emails introducing the research and asking for research participation were sent to four addresses related to the management and assessment of the studied program in the Florida Department of Education. The researcher received one acceptance for a phone interview. The main topics of the talk were sent before the interview (Appendix 12). The state official has worked for approximately 8 years in the Florida Department of

Education. The discussion was informative, with explanations and comments on overall program management and effectiveness.

There are two difficulties in collecting qualitative data for the research. First, the Miami-Dade school district has just hired a new superintendent in Spring 2022. This has led to some organizational changes in the school district.[4] Some district officials were busy adapting to these changes. A tight schedule may have prevented them from participating in external research activities. Second, some state and district officials gave feedback that they were not familiar with the issues raised in the research or the survey. The reasons were that their working areas were not directly related to the research topics or RttT had been implemented before they started their current jobs.

Findings and Discussion

The surveyed and interviewed district officials considered student achievement, especially the performance of low-achieving schools, a higher success of RttT than the program's other objectives, including education standards and assessments, data system development, and teachers and principals' effectiveness. There were no significant challenges in implementing RttT. In addition, federal grants are regarded as a supplement resource in nature that is above and beyond the regular funding of the district.

The interviewed officials believed that FEFP focused on improving education equity, which means the funding mechanism paid attention to factors related to more expensive interventions for students with higher needs. The FEFP formula has had some elements enabling increased funding for school districts with higher performance (e.g.,

[4] The invitations for participating in the survey and interviews were also sent to some former staff who had just changed jobs during the time of this office change.

school recognition program). During 2005–2015, the funding mechanism fluctuated slightly each year with some adjustments, but the formula methodology did not change.

In general, FEFP is considered helpful to the education system in the district; although some officials think it is at an average level, others highly appreciate the program's contribution. FEFP was believed to provide a vital financial resource for the Miami-Dade school district, facilitate a relatively equal average spending per student across districts, and take into account opportunities for students in vulnerable groups.

All survey respondents and interviewees in Miami-Dade agreed that FEFP had affected spending per student and teacher salaries the most. Other issues at lower ranks are student achievement and class size. The access and performance of students in vulnerable groups were not regarded as the most affected areas of the program. Also, the district officials confirmed that smaller class sizes could help students in special programs, and FEFP contributed to reducing the pupil–teacher ratio in these programs. However, there is no consensus on the positive effect of teacher salaries on dropout rates.

Miami-Dade officials showed their concerns about the district's high cost of living and the cost adjustment in the FEFP formula. For example, teacher quality is considered one of the most important factors in improving education performance. Teacher salaries are a key policy tool to strengthen education quality. Miami-Dade's higher cost of salaries, thus, required the district to have a more expensive investment level to improve their system. The FEFP formula is believed to have the potential to do better in incorporating this issue (e.g., the cost adjustment via the *District Cost Differential*), which could increase the sufficiency of the funding for the district.

The interviews highlight the local discretion and the connection between grant implementation and effectiveness. FEFP is considered an annual financial resource distributed to districts. While districts need to spend the funding parallel with some adjustment categories in the funding formula, they generally have autonomy in using the resource. The effectiveness of the FEFP, then, depends on the local implementation.

Current expenditures, including instruction-related spending and salaries, depend on FEFP. When receiving RttT funding, spending on instruction or instruction support services is thought to change the most. Expenditures on capital outlay or debt service were not considered the most changing factor with the federal funding.

District officials emphasized the role of their human capital. They thought the outperforming of the district resulted from good leadership in both goal setting and implementation. They also show their confidence in a good team that has realized the district's education goals.

Overall Findings of the Case Study

RttT seemed to meet its goal in the Miami-Dade school district. The student achievement in Miami-Dade was regarded to have improved and looked better compared to other school districts (within and outside Florida) that did not participate in the program. The FEFP was considered to aim for education equity for students in vulnerable groups and efficiency, besides equal spending per student. The state funding seemed to contribute to the improvement of students in special groups and education achievement. However, they were not considered the most significant impact of the program; instead, it was equal spending per student across the district. There was no strong evidence for an

interactive effect of the federal grant on the relationship between FEFP and expenditures in the district.

The feedback from the state and district highlights three issues in grant management: (1) the relationship between the discretion of local districts in using higher governments' funding and the consequential effectiveness of the programs, (2) the importance of leadership and human capital in grant implementation, and (3) the role of an appropriate cost adjustment for a fair foundation program.

CHAPTER 8. CONCLUSION

The Examination Across School Districts

Race to the Top Program

This study argues conceptually that results-based transfers provide more efficient and effective measures because such grant financing encourages program designs tailored to local contexts and focused on citizen-based local accountability. This new approach facilitates an accountable and responsive performance on the part of subnational governments. Output-based grants also reflect a shift in governments 'roles from examining compliance to checking service quality, enabling innovative interventions by implementing agencies. Additionally, results-based transfers could present an efficient tool in educational development because of the compatibility in principles of the grant policy and the educational accountability system.

The study investigates the impacts of RttT on student outcomes for empirical evidence regarding the application of the results-based approach when allocating intergovernmental transfers to subnational levels for educational improvement. The quasi-experimental comparison results indicate some positive influences of RttT when comparing results between local governments in winning and non-applying states. However, the overall empirical examination does not support the view that RttT had a significant positive impact on local educational achievements. This result may be attributable to a lack of a clear and singular focus in RttT on specified, achievable outputs, as the program had multiple objectives that included inputs, intermediate inputs, processes, and outputs. Further, the program lacked voice and exit options for parents in school choice as a built-in mechanism for citizen-based accountability for performance.

For an output-based transfer to realize its full potential impact, especially in the educational accountability system, it must have a singular focus on output, and the design must provide a self-reinforcing mechanism for citizen-based accountability for performance. An example of this self-reinforcing mechanism is parents having voice and exit options, that is to say, a choice of enrolling/re-enrolling their children in better-performing schools rather than being assigned administratively to schools based on their geographical location or other considerations.

The examination could be improved if reliable data were available to control for more factors or policies that school districts or the states in control groups adopted during the research period to follow other reforming districts and states. In addition, alternative variables, besides graduation rates and test scores, should be considered for future investigation in order to mitigate the adverse effects of standardized test inflation, if any, on the estimation outcomes. Another important point is that RttT expired only in 2015 in the participating states, and sufficient time has not yet elapsed in terms of determining its long-term impact.

A few suggestions for future research on this topic may be in order. The spillover effects of inducing reform policies have created policy diffusion or spatial effects at the state and district levels. If this effect could be assessed more closely under the pressure of the accountability system, a more comprehensive picture of RttT impacts, in particular, and of educational results-based transfers, in general, could be gained. Additionally, due to the importance of the recipient subnational governments' capacity in implementation, further research on the role of local school districts' capacity in results-based grants' successes helps design such transfers in the future. Another point is that future research

can select another state with a different participation level of local education agencies to supplement the findings of this study. Lastly, the RttT grant's effectiveness can be further examined by comparing this federal grant with state-based or local-based grants with the same approach of results-based transfers. A framework with some criteria of grant effectiveness would also facilitate comparisons with state or local grant programs that apply different design strategies.

Florida Education Finance Program

The research shows that in order to better understand the impacts of the current foundation programs in states, a broader approach should be employed. The equalization of school funding simply embodied by equal spending per student is not likely to be the only objective. The evolution of foundation programs now requires evaluators to consider dimensions of education efficiency and adequacy, along with equality.

Grant formulas can reflect a state's ambition for its foundation program. The program's impact depends on the way the state builds its funding formula. The grant's influences are also subject to how the state deals with the other challenges of equalization transfers. For example, a state's property tax policy and the willingness of school districts to raise their taxes beyond foundation rates. Furthermore, the educational investment strategies of states and local districts, i.e., how state and school districts dictate key educational input and intermediate input factors, could significantly influence the causal relationships between financial resources and education outputs.

The examination of Florida's foundation program, FEFP, strengthens these arguments. The FEFP formula displays a higher aim than horizontal equalization.

Simultaneously, the state has tried to control the discretion of school districts in taxation through the grant scheme. The research applies the goal-free approach and the model of the results chain of education services to better capture the program's impact. FEFP appears to promote equal spending per student across the state. However, FEFP seems not to improve student outcomes. It is also likely to have little influence on helping students in need or increasing teaching quality. Further studies could focus more on the effectiveness of the grant formula's components. With the goal-free approach, exploring more variables in the results chain of the education services would help gain a more comprehensive understanding of foundation programs.

Interaction Effects of the Federal Funding

The research argues that the local discretion in grant program implementation may cause widespread occurrences of grant fungibility across different grant types. The recipient governments tend to use additional incomes associated with their own priorities. For example, federal transfers are rarely spent entirely to support the targeted activities but are often partly used to substitute for other recipient government priorities. Due to this replacement, the impacts of federal grants have become less than expected.

This research aims to shed more light on this dynamic in education grants at the local level by investigating the interactive effect of RttT on the relationship between FEFP and school districts' expenditures. FEFP has been the most prevalent state transfer to local school districts for over 40 years, while RttT was a federal grant scheme for 5 years. The FEFP then can be considered long-term funding, and the RttT program was a short-term aid for school districts.

The investigation across school districts in Florida showed that the presence of the extra resources from the federal government was likely to decrease the proportions of spending related to current expenditure, specifically instruction spending (instruction expenditures, instruction support services, general support services) and salaries, in school districts that are more reliant on the state funding. At the same time, these school districts can gradually raise their capital outlay in terms of both absolute and relative values. However, the size of the federal grant was not likely to affect the connection between the state funding and school district budgetary allocations.

The Case of the Miami-Dade School District

The investigation of the grant impact on the Miami-Dade school district provides supplemental evidence for the findings of the statewide assessment in association with the theoretical discussion about the influences of local contexts and program implementation on grant effectiveness. The quantitative and qualitative data collection helps enrich the data triangulation of the case study. Archival data can illustrate a realistic picture of the situation, while the survey and interviews provide practitioners' narration for a more thorough understanding of that picture.

The findings from the case study are not entirely consistent with the findings in Phase 1 of this research. RttT seemed to increase student achievement in Miami-Dade. FEFP was considered a way to aim for further rather than equal spending per student. It has focused attention on education opportunities for students in vulnerable groups and efficiency. The most significant impact of the program is spending per student, while the improvement of students in special groups and education achievement seemed to be

affected only slightly by the program. The interactive effect of the federal grant on the relationship between FEFP and expenditures in the district was not shown.

These research findings show the potential differences between average assessments and specific situations of individual school districts. Further research is encouraged to understand the different levels of dependence on grant transfers of school districts and local factors for the success of grant implementation.

Limitations

This research analyzes the impact of intergovernmental transfer policies within the framework of Florida only. The examination is also narrowed to Florida's two major programs carried out recently. The goals of each program determined in its original design are the foundation for assessing its effectiveness. Therefore, the findings of this research are related to the objectives of the studied programs. As a result, the three main principles of education grants—equity, efficiency, and liberty—cannot be all reflected in the analyses. Last, although investigating the grant policies at both federal and state levels, this research does not pursue an answer to the question of the horizontal effects of federal grants across different states.

Concluding Remarks

This research aims to provide a theoretical foundation and empirical evidence on the impact of intergovernmental aid in education and inform future policy reforms. It assesses the effects of the federal program, Race to the Top, and the state foundation program, Florida Education Finance Program, at the local level in association with the grant designs and the context of recipient local governments. This research first highlights the role of grant design when assessing the effectiveness of the federal and

state-funded programs. It also seeks information on any influence of the concurrent implementation of the grant programs at the school district level. The analyses show potential additional effects of grant programs conducted simultaneously on local expenditures. Last, this research examines the federal and state funding in a specific school district in Florida.

Overall, these research findings show limited effects of the grants, resulting from a lack of a clear and singular focus on the specified output, an absence of citizen-based accountability in the implementation process, and grant fungibility at the local level. The research emphasizes the importance of grant policy formulation and the determinant role of local discretion and implementation in utilizing higher-level government funding.

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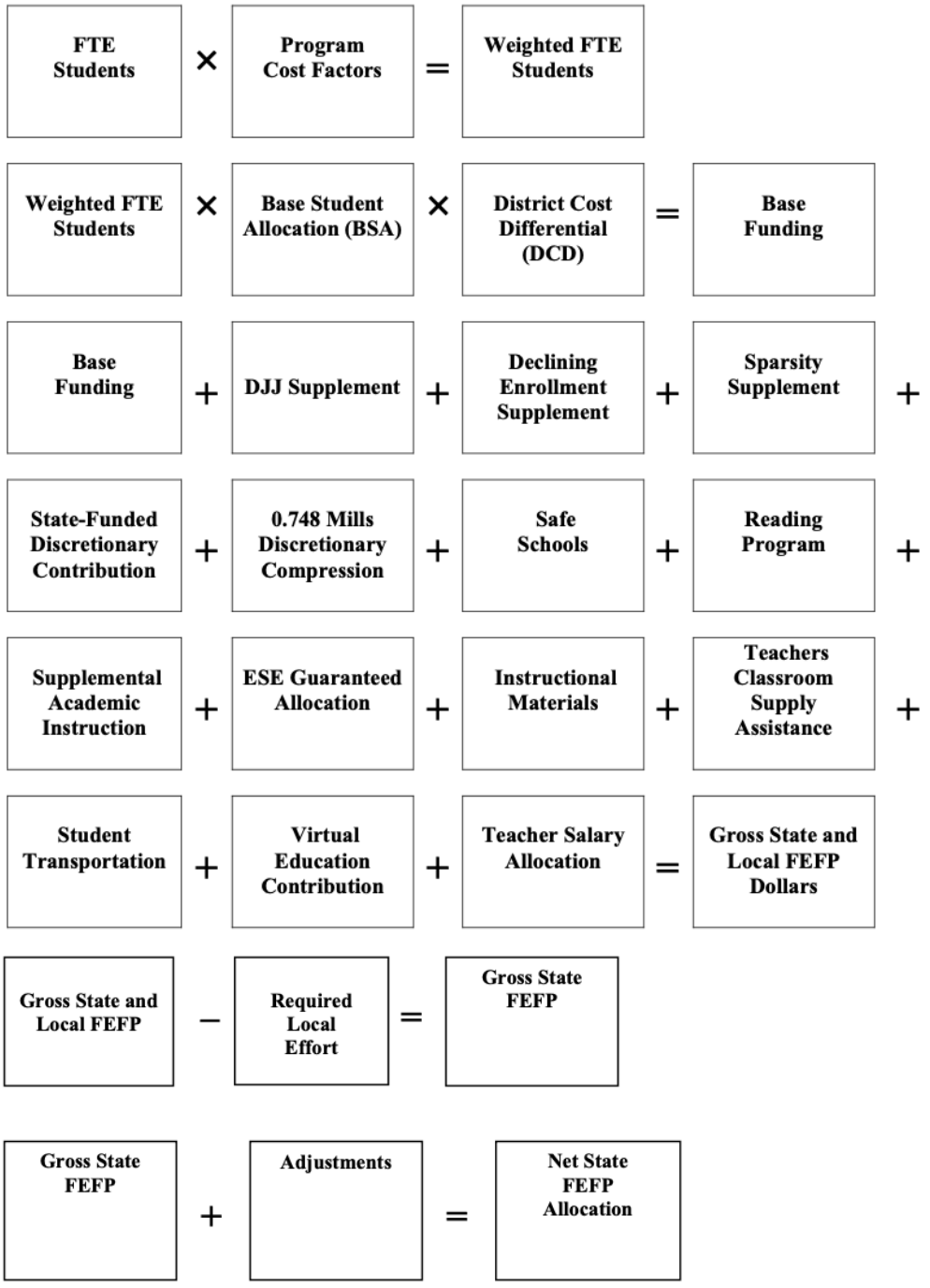
APPENDICES

Appendix 1. Grant Formula of the Florida Education Finance Program



Source: 2013-14 Funding for Florida School Districts Report, Florida Department of Education

Appendix 2. Variable Description - Chapter 4

Variables	Description	Sources
RttT Average	Interaction term between the dummy variable year (average) and dummy variable RttT. Dummy variable RttT indicates districts that received the RttT funds for district-level projects. In intra-state comparison, it is 1 for school districts in Florida that received the RttT fund, 0 for school districts in Florida that did not receive the RttT fund. In across-state comparison, it is 1 for Florida, 0 for Texas or Alabama	
RttT 11 – RttT 16	Interaction term between the dummy variable year (04-16 respectively) and dummy variable RttT. Dummy variable RttT indicates districts that received RttT funds for district-level projects. In intra-state comparison, it is 1 for school districts in Florida that received the RttT fund, 0 for school districts in Florida that did not receive the RttT fund. In across-state comparison, it is 1 for Florida, 0 for Texas or Alabama	
FLORIDA		
Graduation Rate	Four-year adjusted cohort graduation rate (percentage)	PK-12 Public School Data Publications and Reports, Archive, Florida Department of Education (FLDOE)
Economically Disadvantaged Students	Proportion of students eligible for free and reduced-price lunch (percentage)	
Teacher salary (log)	Logarithms of average teacher salaries in Florida (dollar)	
Teachers' years of experience	Teachers' average years of experience in Florida (year)	
Total Students (log)	Logarithms of the total membership	
White	Percentage of students reported as white	
Mathematics Test Scores	Percentage of students at grades 3-10 in Florida achieved level 3 or above in the state's mathematics tests.	K-12 Student Assessment, Results, FLDOE
Reading Test Scores	Percentage of students at grades 3-10 in Florida achieved level 3 or above in the state's reading tests.	
Total Spending (log)	Logarithms of total expenditure per unweighted full-time equivalent student (UFTE) (dollar). The indicators used for the computation are Total Expenditure and UFTE.	Funding and Financial Reporting, Profiles of Florida School Districts, Revenues and Expenditures, FLDOE
FEFP Spending (log)	Logarithms of adjusted net state Florida Education Finance Program (FEFP) expenditure per unweighted full-time equivalent student (UFTE) (dollar).	
Median household income (log)	Logarithms of median household income in Florida (by county, dollar).	Small Area Income and Poverty Estimates (SAIPE) School District Estimates, US Census
Poverty	The proportion of Estimated Number of Relevant Children 5 to 17 Years Old in Poverty Who are Related to the Householder in Estimated Population 5-17 (by school district, percentage)	
ALABAMA		
Graduation Rate	Four-year cohort graduation rate (percentage) by school district	Education Report Card, Supporting Data, Alabama

Variables	Description	Sources
Total Spending (log)	Logarithms of per-pupil expenditure at school district level (county and city systems) from all funds (dollar)	Department of Education (ALDOE)
Poverty	The proportion of Estimated Number of Relevant Children 5 to 17 Years Old in Poverty Who are Related to the Householder in Estimated Population 5-17 (by school district, percentage)	Small Area Income and Poverty Estimates (SAIPE) School District Estimates, US Census
Total Students (log)	Logarithms of total enrollment	Education Report Card, Supporting Data, ALDOE and Student Data for Alabama's School Districts for the Past 11 Years, Alabama School Connection
White	Percentage of white student enrollment	
TEXAS		
Graduation Rate	Four-year longitudinal graduation rate (percentage) by county	Accountability Research, Completion, Graduation, and Drop-outs, Texas Department of Education
Total Spending (log)	Logarithms of the average of total actual expenditure per student, by county (dollar). The indicators used for the averaging computation are Total Actual Expenditure and Total Students.	Performance Reporting, Snapshot: School District Profile, Texas Department of Education. (data are aggregated for all school districts in respective counties)
Economically Disadvantaged Students	Percentage of economically disadvantaged students, by county. Economically disadvantaged students are those eligible for free or reduced-price meals under the National School Lunch and Child Nutrition programs or other public assistance. The indicators used for the computation are Economically Disadvantaged Student Percentage and Total Students. (percentage)	
Total Students (log)	Logarithms of total students in membership, by county. The indicator used for the computation is Total Student.	
White	Percentage of white students, by county. The indicators used for the computation are White Student Percentage and Total Students.	

Appendix 3. Descriptive Statistics - Chapter 4

Variables	Florida			Alabama			Texas		
	Obs.	Mean	Std. Dev	Obs.	Mean	Std. Dev	Obs.	Mean	Std. Dev
Graduation rate	804	69.539	11.257	917	85.124	9.242	1764	92.591	5.861
Reading Grade 5	268	58.660	8.256						
Reading Grade 9	268	51.254	9.890						
Mathematics Grade 5	268	53.847	8.722						
Mathematics Grade 7	268	54.593	10.427						
FEFP spending	804	2791.689	1395.715						
Total Spending	804	8798.448	1002.858	917	9133.317	1032.267	1764	13853.46	7881.264
Median household income	804	42828.2	7930.519						
Teacher salary	803	44298.07	3974.548						
Teachers' years of experience	803	12.005	1.922						
Economically disadvantaged students	469	59.744	12.015				1764	59.325	13.470
Poverty	804	22.864	6.950	917	28.703	9.764			
Total students	804	40068.69	64391.98	917	5564.929	7652.436	1764	20367.12	73788.93
White	469	57.238	20.055	917	58.124	28.768	1764	45.676	21.411

Appendix 4. Variable Description - Chapter 5

Variables	Description	Sources
Graduation Rate	Four-year adjusted cohort graduation rate (percentage)	PK-12 Public School Data Publications and Reports, Archive, Florida Department of Education (FLDOE)
Average Teacher salary (log)	Logarithms of average teacher salaries in Florida (dollar)	
Teachers' Average Years of Experience	Teachers' average years of experience in Florida (year)	
Total Current Expenditure per Student	Total current expenditure per unweighted full-time equivalent student (UFTE) (dollar). The indicators used for the computation are Total Current Expenditure and UFTE.	
Graduation Rate of Economically Disadvantaged Students	Proportion of graduated students in the cohort of economically disadvantaged students (percentage)	PK-12 Public School Data Publications and Reports, Archive, Florida Department of Education (FLDOE) Assessment, Research and Data Analysis, Miami-Dade School District, Florida
Graduation Rate of Nonwhite Students	Proportion of graduated students in the cohort of nonwhite students (percentage)	
Graduation Rate of Students Enrolled in Special Programs	Proportion of graduated students in the cohort of students with a disability (percentage)	
Graduate Rate of Students Enrolled in Programs of Language Assistance	Proportion of graduated students in the cohort of English Language Learners (percentage)	
Dropout Rate	Florida's single-year dropout rate. It is the percentage of high school students that dropout in any one year (percentage)	
Total Expenditure per Student (log)	Logarithm of total expenditures of school districts is divided by the fall membership as reported in the district finance file	Elementary/Secondary Information System (EISi), National Center for Education Statistics (NCES)
Total Revenue per Student	Total general revenue from Federal, State, and Local sources is divided by the fall membership as reported on the district finance file. (dollar)	
Revenue from Local Sources per Student	District's total general revenue from local sources divided by the fall membership as reported on the district finance file (dollar)	
Pupil-Teacher Ratio	Total Student is divided by the Full-Time Equivalent teachers	
Revenue-Federal Sources (log)	District's total general revenue from the Federal Government is divided by the total revenue multiplied by 100 (percentage)	
Nonwhite Students (Percentage of Nonwhite Students)	Number of nonwhite students is divided by the total number of students (percentage)	
Percentage of Students Enrolled in Special Programs	Number of students having a written Individualized Education Program under the Individuals with Disabilities Education Act is divided by Total Student (percentage)	
Percentage of Students Enrolled in Programs of Language Assistance	Number of students served in appropriate programs of language assistance is divided by Total Student (percentage)	
Total Students (log)	Total Number of students as reported by each school (people)	

Variables	Description	Sources
FEFP per Student (log)	Logarithms of adjusted net state Florida Education Finance Program (FEFP) allocation per unweighted full-time equivalent student (UFTE) (dollar)	Profiles of Florida School Districts, Revenues, and Expenditures, FLDOE
FEFP share	Adjusted Net State FEFP is divided by total general revenue (percentage)	FLDOE and NCES
Median household income (log)	Logarithms of median household income in Florida (by county, dollar)	Small Area Income and Poverty Estimates School District Estimates, US Census
Poverty (Percentage of Students from Poor Families)	The proportion of Estimated Number of Relevant Children 5 to 17 Years Old in Poverty Who are Related to the Householder in Estimated Population 5-17 (by school district, percentage)	

Appendix 5. Descriptive Statistics - Chapter 5

Variables	Obs.	Mean	Std. Dev.
Graduation Rate	804	69.539	11.257
Graduation Rate of Economically Disadvantaged Students	804	62.861	10.862
Graduation Rate of Nonwhite Students	799	64.408	13.008
Graduation Rate of Students Enrolled in Special Programs	798	46.880	15.595
Graduate Rate of Students Enrolled in Programs of Language Assistance	726	44.514	26.944
Average Teacher salary	803	44298.070	3974.548
Teachers' Average Years of Experience	803	12.005	1.922
Dropout Rate	670	2.339	1.646
Total Current Expenditure per Student	804	8798.448	1002.858
Total Expenditure per Student	804	10363.04	1993.795
Total Revenue per Student	804	10086.300	1574.605
Revenue from Local Sources per Student	335	4388.087	2356.400
Pupil-Teacher Ratio	804	15.107	1.521
Revenue-Federal Sources	804	13.098	4.840
Nonwhite Students (Percentage of Nonwhite Students)	798	40.897	20.151
Percentage of Students Enrolled in Special Programs	335	4.658	4.619
Percentage of Students Enrolled in Programs of Language Assistance	335	15.911	3.244
Total Students	798	40362.47	64555.35
FEFP per Student	804	2791.689	1395.715
FEFP share	804	28.380	14.732
Median household income	804	42828.200	7930.519
Poverty (Percentage of Students from Poor Families)	804	22.864	6.950

Appendix 6. Variable Description - Chapter 6

Variables	Description	Sources
Instruction	Dependent variables of different spending items. The proportion of spending: the share in total expenditures Spending per student: amount of spending divided by the total number of students	Profiles of Florida School Districts, Revenues, and Expenditures, FLDOE
Instruction Support Services		
General Support Services		
Total Instruction Expenditures		
Community Services		
Current Expenditures		
Capital Outlay		
Debt Service		
Salaries		
Employee Benefits		
FEFP share	Adjusted Net State FEFP is divided by total general revenue (percentage)	FLDOE and NCES
RttT funding per student	Amount of funding from RttT divided by total number of unweighted fulltime equivalent students	FLDOE and school districts
Total Students (log)	Unweighted fulltime equivalent students (UFTE)	FLDOE
Nonwhite Students (Percentage of Nonwhite Students)	Number of nonwhite students is divided by the total number of students (percentage)	Elementary/Secondary Information System (EISi), National Center for Education Statistics (NCES)
Students with disabilities	Number of students having a written Individualized Education Program under the Individuals with Disabilities Education Act is divided by Total Student (percentage)	
ELL students	Number of students served in appropriate programs of language assistance is divided by Total Student (percentage)	
Median household income	Median household income in Florida (by county, dollar)	Small Area Income and Poverty Estimates School District Estimates, US Census
Poverty (Percentage of Students from Poor Families)	The proportion of Estimated Number of Relevant Children 5 to 17 Years Old in Poverty Who are Related to the Householder in Estimated Population 5-17 (by school district, percentage)	
Percentage of Local Revenue from Federal sources	Total revenue from federal sources divided by the total revenue multiplied by 100	EISi, NCES

Appendix 7. Descriptive Statistics - Chapter 6

Variables	Obs.	Mean	SD
Percentage of instruction spending	737	48.765	5.693
Percentage of instruction support service spending	737	9.681	2.101
Percentage of general support service spending	737	26.881	4.629
Percentage of total instruction expenditures	737	85.327	9.409
Percentage of community service spending	737	.600	.802
Percentage of current expenditures	737	85.928	9.389
Percentage of capital outlay	737	10.318	8.425
Percentage of debt service spending	737	3.754	3.435
Percentage of salary spending	737	50.751	6.476
Percentage of benefit employee spending	737	14.957	2.285
Instruction spending per student	737	5,362.575	690.864
Instruction support service spending per student	737	1,064.333	246.338
General support service spending per student	737	2,964.256	611.863
Total instruction expenditure per student	737	9,9391.164	1,224.816
Community service spending per student	737	67.299	91.599
Current expenditures per student	737	9,458.463	1,233.554
Capital outlay per student	737	1,332.349	1,786.475
Debt service spending per student	737	437.663	453.305
Salary spending per student	737	5,574.452	729.543
Employee benefit spending per student	737	1,648.758	286.971
Share of FEFP Funding	737	28.149	14.825
Level change	737	.505	.500
Slope change	737	1.262	1.743
Pretrend	737	0	3.044
RttT funding per student	380	45.641	80.977

Variables	Obs.	Mean	SD
Total students	737	39,483.140	63,581.350
ELL students	737	4.619	4.596
Students with disabilities	737	15.767	3.263
Nonwhite students	731	40.550	20.098
Median HH income	737	42,448.550	7,683.551
Poverty	737	22.859	6.995
Federal revenues per student	737	1,428.987	560.520

Appendix 8. Model 1. Interactive Effects on the Proportion of Expenditure Categories (DID assumption test)

Model 1. Interactive Effects on the Proportion of Expenditure Categories (DID assumption test)										
	Instruction	**Instruction Support Services**	**General Support Services**	**Total Instruction Expenditures**	**Community Services**	**Current Expenditures**	**Capital Outlay**	**Debt Service**	**Salaries**	**Employee Benefits**
FEFP share	0.4406***	0.0854**	0.2604***	0.7864***	0.0044	0.7909***	-0.8096***	0.0188	0.4753***	0.1492***
	(0.0965)	(0.0265)	(0.0527)	(0.1589)	(0.0050)	(0.1616)	(0.1601)	(0.0349)	(0.0906)	(0.0282)
Level change	0.9922	-1.6642	-1.1519	-1.8239	0.1228	-1.7010	0.7514	0.9496	-1.1589	-0.2215
	(1.5047)	(0.9166)	(1.0006)	(2.5235)	(0.0882)	(2.5245)	(2.4812)	(0.5497)	(1.4771)	(0.7879)
Slope change	1.5928*	0.9893**	0.9672	3.5494**	0.0083	3.5576**	-3.0418**	-0.5159	1.8655**	0.6854**
	(0.6095)	(0.3524)	(0.5421)	(1.0694)	(0.0399)	(1.0676)	(0.9376)	(0.2777)	(0.6435)	(0.2025)
FEFP share*	-0.0398	0.0087	0.0510	0.0199	-0.0001	0.0198	0.0259	-0.0458*	0.0219	-0.0028
Level change	(0.0367)	(0.0103)	(0.0328)	(0.0642)	(0.0021)	(0.0644)	(0.0705)	(0.0181)	(0.0359)	(0.0129)
FEFP share*	-0.0263*	-0.0085**	-0.0166**	-0.0513**	0.0000	-0.0513**	0.0447**	0.0066	-0.0243*	-0.0059
Slope change	(0.0102)	(0.0025)	(0.0054)	(0.0156)	(0.0005)	(0.0158)	(0.0140)	(0.0049)	(0.0100)	(0.0034)
Pretrend	-0.1091	-0.2356	-0.3509	-0.6956	-0.0084	-0.7041	0.3449	0.3591	-0.5995	-0.0842
	(0.5909)	(0.1300)	(0.2766)	(0.8239)	(0.0312)	(0.8228)	(0.7060)	(0.3232)	(0.5270)	(0.1449)
Total students	0.0002*	0.0000	0.0001	0.0003**	0.0000	0.0003**	-0.0002	-0.0001*	0.0001	0.0000
	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0000)
ELL students	0.1772	0.1118*	0.1293	0.4183	0.0200	0.4383	-0.2847	-0.1536	0.1589	0.0754
	(0.2536)	(0.0558)	(0.1741)	(0.3689)	(0.0167)	(0.3735)	(0.3711)	(0.1235)	(0.1880)	(0.0975)
Students with	0.2955	-0.0216	-0.2017	0.0723	0.0092	0.0814	-0.1732	0.0918	0.0793	-0.0668
disabilities	(0.2978)	(0.0836)	(0.1798)	(0.5153)	(0.0244)	(0.5128)	(0.4722)	(0.1130)	(0.3197)	(0.1009)
Nonwhite	0.2469	-0.0010	-0.1169	0.1290	0.0024	0.1314	-0.2427	0.1113	0.1657	0.0968*
	(0.1481)	(0.0402)	(0.0873)	(0.2054)	(0.0164)	(0.2062)	(0.2346)	(0.0991)	(0.1207)	(0.0415)

Model 1. Interactive Effects on the Proportion of Expenditure Categories (DID assumption test)										
	Instruction	**Instruction Support Services**	**General Support Services**	**Total Instruction Expenditures**	**Community Services**	**Current Expenditures**	**Capital Outlay**	**Debt Service**	**Salaries**	**Employee Benefits**
Median HH	-0.8262	-0.6151	-0.2800	-1.7212	0.3372	-1.3840	2.0107	-0.6267	-5.7829	-2.9226
incomes (log)	(5.2076)	(1.5636)	(2.7405)	(7.5001)	(0.5570)	(7.5480)	(7.6706)	(2.1246)	(4.6240)	(1.5307)
Poverty	0.1365	0.0135	0.0261	0.1762	-0.0095	0.1667	-0.1417	-0.0250	0.0403	-0.0042
	(0.0800)	(0.0257)	(0.0521)	(0.1182)	(0.0064)	(0.1184)	(0.1178)	(0.0333)	(0.0713)	(0.0267)
Federal	0.9820	2.5700***	4.8086*	8.3606**	0.2434	8.6040**	-7.6647**	-0.9393	2.7315	-0.6113
revenues (log)	(1.7047)	(0.7265)	(2.2575)	(2.7253)	(0.2040)	(2.7021)	(2.6371)	(0.8248)	(1.8556)	(0.5023)
_cons	6.0064	-7.5560	-10.5476	-12.0972	-5.3598	-17.4570	100.6091	16.8480	61.0457	39.0685*
	(58.1899)	(18.9912)	(40.7333)	(85.8290)	(6.7407)	(86.3696)	(88.8355)	(26.0378)	(55.3149)	(18.3142)
R^2	0.4491	0.2655	0.2944	0.4212	0.0849	0.4249	0.4421	0.0617	0.3855	0.4366
adj. R^2	0.4311	0.2416	0.2714	0.4023	0.0551	0.4062	0.4239	0.0312	0.3656	0.4183
N	731	731	731	731	731	731	731	731	731	731

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 9. Model 1. Interactive Effects on Expenditure per Student (DID assumption)

Model 1. Interactive Effects on Expenditure per Student (DID assumption test)										
	Instruction	**Instruction Support Services**	**General Support Services**	**Total Instruction Expenditures**	**Community Services**	**Current Expenditures**	**Capital Outlay**	**Debt Service**	**Salaries**	**Employee Benefits**
FEFP share	-0.0009	-0.0011	-0.0008	-0.0010	-0.0215	-0.0010	-0.0651***	-0.0232	-0.0010	-0.0003
	(0.0007)	(0.0017)	(0.0010)	(0.0006)	(0.0124)	(0.0006)	(0.0142)	(0.0253)	(0.0007)	(0.0009)
Level change	-0.0535*	-0.1928**	-0.1043**	-0.0904***	0.2247	-0.0891***	0.4209*	0.2817	-0.0893***	-0.0887*
	(0.0256)	(0.0607)	(0.0329)	(0.0238)	(0.2085)	(0.0239)	(0.1998)	(0.2080)	(0.0257)	(0.0342)
Slope change	-0.0115	0.0414	-0.0103	-0.0047	0.2909*	-0.0048	-0.2103	-0.2311*	-0.0086	-0.0025
	(0.0145)	(0.0274)	(0.0092)	(0.0098)	(0.1288)	(0.0099)	(0.1115)	(0.0898)	(0.0113)	(0.0110)
FEFP share*	0.0000	0.0016	0.0025**	0.0010*	-0.0017	0.0010*	-0.0115	-0.0083	0.0010	0.0008
Level change	(0.0003)	(0.0011)	(0.0009)	(0.0004)	(0.0065)	(0.0004)	(0.0067)	(0.0070)	(0.0005)	(0.0006)
FEFP share*	0.0001	-0.0002	0.0001	0.0000	-0.0026	0.0000	0.0035*	0.0010	0.0002	0.0003
Slope change	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0025)	(0.0001)	(0.0017)	(0.0020)	(0.0001)	(0.0002)
Pretrend	0.0136	-0.0060	0.0018	0.0077	-0.0420	0.0076	0.0263	0.0435	0.0049	0.0094
	(0.0090)	(0.0134)	(0.0078)	(0.0068)	(0.0528)	(0.0068)	(0.0586)	(0.0955)	(0.0073)	(0.0080)
Total students	0.0000*	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ELL students	-0.0029	0.0050	-0.0020	-0.0012	0.0717	-0.0010	-0.0212	-0.0531	-0.0024	-0.0008
	(0.0023)	(0.0061)	(0.0053)	(0.0023)	(0.0566)	(0.0023)	(0.0434)	(0.0545)	(0.0031)	(0.0044)
Students with	0.0019	-0.0061	-0.0102**	-0.0029*	0.0470	-0.0029	-0.0185	-0.0286	-0.0026	-0.0092*
disabilities	(0.0021)	(0.0058)	(0.0030)	(0.0014)	(0.0618)	(0.0015)	(0.0469)	(0.0775)	(0.0023)	(0.0035)
Nonwhite	0.0006	-0.0049	-0.0077*	-0.0031*	0.0269	-0.0030	-0.0145	0.0575	-0.0015	0.0020
	(0.0016)	(0.0040)	(0.0030)	(0.0015)	(0.0312)	(0.0015)	(0.0245)	(0.0415)	(0.0020)	(0.0025)

Model 1. Interactive Effects on Expenditure per Student (DID assumption test)										
	Instruction	**Instruction Support Services**	**General Support Services**	**Total Instruction Expenditures**	**Community Services**	**Current Expenditures**	**Capital Outlay**	**Debt Service**	**Salaries**	**Employee Benefits**
Median HH	0.0397	0.0349	0.0245	0.0463	-0.3234	0.0496	-0.2577	-2.0541	-0.0342	-0.1117
incomes (log)	(0.0581)	(0.1268)	(0.0817)	(0.0427)	(1.2498)	(0.0426)	(0.7845)	(1.3438)	(0.0532)	(0.0681)
Poverty	0.0009	0.0001	-0.0011	0.0001	0.0056	-0.0000	-0.0275*	-0.0439	-0.0008	-0.0020
	(0.0008)	(0.0027)	(0.0016)	(0.0008)	(0.0223)	(0.0008)	(0.0124)	(0.0324)	(0.0012)	(0.0017)
Federal	0.0680**	0.3049***	0.2119**	0.1568***	0.5639	0.1586***	-0.3405	-0.5604	0.1115***	0.0137
revenues (log)	(0.0214)	(0.0639)	(0.0662)	(0.0268)	(0.4802)	(0.0267)	(0.2506)	(0.4293)	(0.0243)	(0.0311)
_cons	7.5231***	4.6200**	6.6873***	7.6413***	-0.8108	7.5989***	16.4206	32.3003	8.3178***	8.5060***
	(0.6833)	(1.5358)	(1.1621)	(0.5309)	(14.4257)	(0.5298)	(8.9573)	(16.2427)	(0.6230)	(0.7605)
R^2	0.8313	0.5792	0.6543	0.8496	0.0661	0.8491	0.5359	0.0628	0.8397	0.8174
adj. R^2	0.8258	0.5655	0.6431	0.8447	0.0357	0.8441	0.5208	0.0323	0.8345	0.8114
N	731	731	731	731	731	731	731	731	731	731

All the variables related to expenditures per student and funding per student are naturally logged. Financial variables are adjusted for inflation using the Bureau of Economic Analysis government price indexes (2012=100). Robust standard errors clustered at the school district level are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 10. Variable Description - Chapter 7

Variables	Description	Sources
Graduation Rate	Four-year adjusted cohort graduation rate (percentage)	PK-12 Public School Data Publications and Reports, Archive, Florida Department of Education (FLDOE) Assessment, Research and Data Analysis, Miami-Dade School District, Florida
Graduation Rate of Economically Disadvantaged Students	Proportion of graduated students in the cohort of economically disadvantaged students (percentage)	
Graduation Rate of Nonwhite Students	Proportion of graduated students in the cohort of nonwhite students (percentage)	
Graduation Rate of Students Enrolled in Special Programs	Proportion of graduated students in the cohort of students with a disability (percentage)	
Graduate Rate of Students Enrolled in Programs of Language Assistance	Proportion of graduated students in the cohort of English Language Learners (percentage)	
Reading and Mathematics Test Scores	Percentage of students at grade 3-10 in Florida achieved level 3 or above in the state's mathematics/reading tests.	
Average Teacher salary (log)	Logarithms of average teacher salaries in Florida (dollar)	
Teachers' Average Years of Experience	Teachers' average years of experience in Florida (year)	
Dropout Rate	Florida's single-year dropout rate. It is the percentage of high school students that dropout in any one year (percentage)	
NAEP Reading and Mathematics Test Scores	Average test scores	NCES
Nonwhite Students (Percentage of Nonwhite Students)	Number of nonwhite students is divided by the total number of students (percentage)	Elementary/Secondary Information System (EISi), National Center for Education Statistics (NCES)
Total Students (log)	Total Number of students as reported by each school (people)	
Total Expenditure per student	Total expenditures made by school districts divided by the fall membership	
Total Revenue per student	Total General Revenue divided by the fall membership	
Percentage of Revenue from Local Sources	The district's total revenue for local sources divided by Total Revenue multiplied by 100.	
Percentage of Revenue from State Sources	Total revenue from state sources divided by the total revenue multiplied by 100	

Variables	Description	Sources
Percentage of Revenue from Federal sources	Total revenue from state sources divided by the total revenue multiplied by 100	
Pupil-Teacher Ratio	Total Student is divided by the Full-Time Equivalent teachers	
Total Current Expenditure (log)	Logarithms of total current expenditure per unweighted fulltime equivalent student (UFTE) (dollar). The indicators used for the computation are Total Current Expenditure and UFTE.	Profiles of Florida School Districts, Revenues, and Expenditures, FLDOE
FEFP per Student (log)	Logarithms of adjusted net state Florida Education Finance Program (FEFP) allocation per unweighted full-time equivalent student (UFTE) (dollar)	
FEFP share	Adjusted Net State FEFP is divided by total general revenue (percentage)	FLDOE and NCES
Median household income (log)	Logarithms of median household income in Florida (by county, dollar)	Small Area Income and Poverty Estimates School District Estimates, US Census
Poverty (Percentage of Students from Poor Families)	The proportion of Estimated Number of Relevant Children 5 to 17 Years Old in Poverty Who are Related to the Householder in Estimated Population 5-17 (by school district, percentage)	
Instruction	Variables of different spending categories. The proportion of spending: the share in total expenditures Spending per student: amount of spending divided by the total number of unweighted fulltime equivalent student (UFTE)	Profiles of Florida School Districts, Revenues, and Expenditures, FLDOE
Instruction Support Services		
General Support Services		
Total Instruction Expenditures		
Community Services		
Current Expenditures		
Capital Outlay		
Debt Service		
Salaries		
Employee Benefits		

Appendix 11. Descriptive Statistics - Chapter 7

	Miami-Dade					Palm Beach				
	Obs	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max
Time	12	6.5	3.606	1	12	12	6.5	3.606	1	12
Intervention	12	.583	.515	0	1	12	.583	.515	0	1
Post-trend	12	2.333	2.605	0	7	12	2.333	2.605	0	7
Total Current Spending	12	8819.769	364.371	8258.506	9645	12	9054.509	401.712	8176.557	9727.594
Teachers' Years of Experience	12	11.644	.946	9.95	13.17	12	12.187	1.900	8.63	14.05
Poverty	12	23.640	3.622	17.666	28.714	12	17.944	3.300	12.761	21.955
Total Students	12	352890.4	5447.793	345525	362070	12	178627	7594.974	170757	192721

Appendix 12. Survey Questions - Case Study of the Miami-Dade School District

Q1 How helpful do you think the Florida Education Finance Program (FEFP) has been to the education development in the Miami-Dade school district?

o0 o1 o2 o3 o4 o5 o6 o7 o8 o9 o10

Q2 What do you consider the top 3 issues most influenced by the funding from the FEFP?

- □ Spending per student (1)
- □ Student achievement (e.g., graduation rates, test scores) (2)
- □ Drop-out rates (3)
- □ Pupil-teacher ratio (4)
- □ Teacher salaries (5)
- □ Years of teachers ’experience (6)
- □ Low-income students' education access and achievement (7)
- □ Exceptional students' education access and achievement (8)
- □ English Language Learners programs (ELL) students' education access and achievement (9)
- □ Non-white students' education access and achievement (10)
- □ Others (please clarify) (11)

_____

Q3 Do you agree or disagree with the following statements?

- Disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Agree (5)
- Don't know (6)

- Higher teachers 'salaries can help reduce the drop-out rate (1)
- A lower pupil-teacher ratio in special programs can be helpful for students in these programs (2)
- FEFP contributes to decreasing the pupil-teacher ratio in special programs (3)
- The amount of funding that Miami- Dade received from FEFP is fair compared to other school districts (4)

Q4 Is there any issue you think the FEFP funding formula should have considered or better considered? If yes, please clarify.

Q5 Did the federal program Race to the Top help improve the following educational issues in the Miami-Dade school district?

- Definitely not (1)
- Probably not (2)
- Might or might not (3)
- Probably yes (4)
- Definitely yes (5)
- Don't know (6)

- Education standards and assessments (1)
- Data systems that measure performance and support instruction (2)
- Teachers and principals' effectiveness (3)
- Lowest-achieving schools' performance (4)
- Student achievement (5)

Q6 What is the biggest challenge in implementing the Race to the Top program?

Q7 How would you rate each of these following spending categories?

- Depends on the FEFP funding the most (1)
- Changed the most when the Dade school district received funding from the Race to the Top program (2)

Spending categories (can select more than one)

- Instruction (1)
- Instructional Support Services (2)
- General Support Services (3)
- Capital Outlay (4)
- Debt Service (5)
- Salaries (6)

Is it also true in other school districts?

- False (1)
- Neither true nor false (2)
- True (3)
- Don't know (4)

Q8 Data shows that Miami-Dade school districts outperformed other comparative districts in Florida. Miami-Dade also made progress in the achievement of students in vulnerable groups.

Do you think about any advantages or measures of the Miami-Dade school district that can be the reasons for those research findings? If yes, please clarify. (e.g., enrollment, urban context, leadership, external resources)

Q9 Do the allocation and implementation of Miami-Dade's federal and state-funded programs need to be improved in anything? If yes, please clarify.

Q10 How long have you been working in the Miami-Dade school district?

- Below 3 years (1)
- 3-5 years (2)
- 6-8 years (3)
- 9-11 years (4)
- Over 11 years (5)

Appendix 13. Interview Questions - Florida State Officials - Case Study of the Miami-Dade School District

Question 1: Do you agree with these findings related to the FEFP program during 2005–2016? Please explain your answers.

1. Equal spending per student or horizontal equalization across school districts is not the only goal of FEFP. The program also aims to improve student achievement and equal opportunities for students with special needs (i.e., expenditure sufficiency for exceptional students). So, the program focuses on education equity, efficiency, and adequacy. (*Please see the section FEFP Formula below for more details*)
2. Florida has tried to control the potentially unequalized revenues caused by school districts ’taxation discretion. Florida’s regulations limit the tax rates school districts could raise above the required millage in the FEFP formula. This maximum discretionary amount is contingent on the schools ’purposes for the tax revenues. At the same time, the Discretionary Compression in the FEFP formula helps support districts failing to reach the state average level after levying the maximum millage rates.
3. In practice, the data analyses show that FEFP appears to promote equal spending per student across the state. However, FEFP seems not to improve student outcomes. It is also likely to have little influence on helping students in need or increasing teaching quality.

Question 2: What are the major challenges in allocating and managing the FEFP funding?

Question 3: Is there any significant change in the FEFP formula during 2005–2016, compared to the previous period? If yes, please provide more detailed information.

Question 4: Is there any significant change in the FEFP formula after 2016? If yes, please provide more detailed information.

Question 5: Is there any change in the spending pattern of school districts when they received additional funding from the Race to the Top program during 2010–2015 (i.e., increase or decrease in specific spending categories, such as instructional spending, capital spending, etc.)? If yes, please provide more detailed information.

Question 6: What are the major challenges for Florida in allocating and managing the federal program, Race to the Top, during 2010–2015?

FEFP Formula

- The Base Funding is adjusted for demographic and economic differences across school districts. The grant formula can be altered if certain factors may raise costs, such as the number of students with special needs, remote regions, high density, or high living cost areas.
- Besides the Base Funding, many different funds are added to the formula. These funds can be divided into two groups. One is for the general population (i.e., general improvement of the whole system); the other is for specific groups of students. In addition, a few funds consist of features of both groups: The same lump-sum amount for all districts plus customized grants based on a district's characteristics.
    - General-population funds are related to safe schools, reading programs, instructional materials, classroom supply assistance, virtual education, and digital classrooms.
    - Specific-group funds are related to the Juvenile Justice Education Program, declining enrollment, sparsity, lab schools, the state average standard supplement, the academic instruction supplement, exceptional students, student transportation, federally owned military installations, National Aeronautics and Space Administration property, and Indian lands.)

- Also, the FEFP seems to integrate performance incentives into its formula when providing supplements for high-achieving students.

→ By incorporating performance incentives and supporting all school districts equally through general-population funding, FEFP is likely to promote better education efficiency (achievement) throughout the state.

→ The cost adjustments to the Base Funding and the incorporation of specific-group targeted funds reflect the state's efforts to enhance equal spending per student and adequate expenditure for equal education opportunities for students with special needs.

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