Master's Thesis of Public Administration

The Effects of Basic Education Voucher Programs on Key Education Outcomes and School Competition

Evidence from the Philippines

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Graduate School of Public Administration
Seoul National University
Global Public Administration Major

Christine Joy O. Mamuyac

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Academic Advisor Choi, Taehyon

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Graduate School of Public Administration
Seoul National University
Global Public Administration Major

Christine Joy O. Mamuyac

Confirming the master's thesis written by
Christine Joy O. Mamuyac

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Chair Ko, Kilkon

Vice Chair Kim, Bonghwan

Examiner Choi, Taehyon

Abstract

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Christine Joy O. Mamuyac
Global Public Administration Major
The Graduate School of Public Administration
Seoul National University

New Public Management (NPM) has emphasized the idea that governments should steer than row. In this paradigm, governments shall encourage and involve other actors, such as private sector and non-government organizations (NGOs), to deliver public services. Further, market-type mechanisms (MTMs) are used to replace rule-based and authority-driven processes and to improve the quality of service and overall effectiveness of organizations. Vouchers, as a type of MTM, are deemed to create consumer choice to users of certain services, while maintaining the funding in the government.

Vouchers also address equity, wherein it improves access to education opportunities. In particular, the Philippine government have implemented voucher programs, namely the Education Service Contracting (ESC) Program and the Senior High School Voucher Program (SHS VP), to improve access to quality basic education. These programs support secondary school students to attend private schools that are contracted by the government. The ESC program provides Grade 6 completers to attend four years of junior high school (JHS) education, from grades 7-10, in private schools. Consequently, the SHS

Voucher Program provides vouchers/subsidies to eligible JHS/ Grade 10 completers who intends to enroll in non-DepEd schools that offer senior high school.

In this regard, this research aims to look into the effects of these voucher programs on: (a) education outcomes, such as net enrollment rate and cohort survival rate; and (b) competition among secondary education market in the Philippines. The study is conducted using panel data analysis using the secondary data obtained from the Philippines' Department of Education (DepED) for school years (SYs) 2013 up to 2020 for most of the variables, and disaggregated per region. Competition is represented by the Herfindahl-Hirschman index (HHI) of net enrolment shares among regions, where an index of 0 means the market is in perfect competition and 1 when it is in monopoly.

The results show that the voucher programs have significant effects on net enrolment rates for both junior and senior high schools using the random effects model. Further, using the fixed effects model, the ESC program is deemed to significantly affect cohort survival rates in junior high school, particularly, the number of ESC beneficiaries and the proportion of ESC beneficiaries relative to the total enrolled JHS students.

The voucher programs are also deemed to significantly affect the competition among the schools. Using the fixed effects model, the following variables were significant: (a) the proportion of ESC beneficiaries relative to the total enrolled JHS students; (b) number of beneficiaries; (c) proportion of schools with ESC beneficiaries relative to the total JHS schools. Also, the amount of grant the proportion of SHS beneficiaries to total SHS enrollment the proportion of SHS VP beneficiaries relative to the total enrollment affect competition in the senior high school. While the study has shown these results, it is important to note that such results may only be used for the years covered in the study given the data limitation.

With this, it is imperative that the Philippine government determine the competition level in the secondary education market and verify whether such competition is efficient for the said market, particularly in achieving improved education outcomes.

Keywords: Philippines, voucher, education, competition, education outcomes
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Chapter 1. Introduction

1.1 Background

Global reforms, which change the role of the state as well as its rapport with citizens, have been around since 1980s (Kettl, 2005). Kettl (2005) notes that these reforms have been remarkable because of the number of nations that implemented them in a short period of time. Also, these reforms have six similar core characteristics, namely: (a) productivity; (b) marketization; (c) service orientation; (d) decentralization; (e) policy; and (f) accountability for results.

The paradigm of New Public Management (NPM) has emphasized the idea that governments should steer rather than row (Kauffman, Majone, and Ostrom, 1986). This entails that the governments shall encourage and involve other actors, such as the private and non-government organizations (NGOs) to deliver public services (Peters, 2011). Further, NPM emphasizes that the governments are deemed to be doing their job aptly if they uphold the values of efficiency and effectiveness in the delivery of public services (Dan & Andrews, 2014).

Further, governance also emphasized the importance of the involvement of different actors in governing. To note, enhancement of democratic participation in making and implementing decisions instead of improving the efficiency of the program administration has been observed in governance literature (Peters, 2011).

Reforms under NPM underscore the replacement of traditional rule-based, authority-driven processes with market-based, competition-driven devices (Kettl, 2005). In this regard, market-type mechanisms (MTMs) are used to improve public service under the NPM paradigm (Dan & Andrews, 2014).

MTMs have at least one significant characteristic of a market can be observed (Blondal, 2005). These include contracting out, quasi markets, privatization, and user-choice mechanisms. Aside from efficiency and effectiveness, MTMs are also expected to improve the quality of service and the overall effectiveness of organizations.

Of these MTMs, contracting out (outsourcing), public-private partnerships, and vouchers are usually used in service provision (Bailey, 2004). MTMs that create consumer choice include those that are provided in alternative systems or are provided through vouchers (Bailey, 2004). Vouchers increase the range of choices available to the users of certain services, rather than by increasing the purchasing power of holders (Bailey, 2004). Also, the funding remains in the government (Blondal, 2005) through the vouchers.

Vouchers, in a principal-agent and holder model, is defined as "an instrument issued by a principal (issuer; i.e., government) that can be redeemed by the holder (beneficiary) for a service, commodity or other benefit provided by an agent (service provider) (Bailey, 2004)." Further, vouchers makes the governments focus on policy-making than in the service delivery process, which is aligned with NPM's principle of "steering not rowing".

Bailey (2004) identifies three (3) types of vouchers in the public sector: (a) privatization vouchers, which are provided for free and can be used to buy stocks in privatized companies; (b) employment vouchers, which provides subsidies for work or training; (c) service vouchers, which are used to avail specific internal (e.g., sports, meals), external (e.g., food and mini-vouchers), and/or full service vouchers (e.g., housing, nursery, taxi, health service, arts, school).

Further, these vouchers come in three forms: (a) explicit vouchers, where a card or coupon is issued to the beneficiaries and the supplier exchanges this for cash from the government; (b) implicit vouchers, where the qualified beneficiaries avails of a service from a designated supplier and the government pays said suppliers directly; and (c) reimbursement of the expenses of the beneficiary.

In OECD countries, vouchers are used in sectors such as housing, education, and child and elderly care (Blondal, 2005). In particular, Netherlands spend around 70 percent of public funding for the primary and secondary education. This funding is provided using an implicit voucher, where both private and public schools receive an equal amount for each student enrolled (Blondal, 2005). On the other hand, explicit vouchers are used in some cities in the United States, where such provide funding for those who transfer from public school system to the private school system (Blondal, 2005).

Vouchers that are designed for improving choice may clash with the access of some socioeconomic groups. The additional amount needed to be paid on top of the voucher's value may also prevent those who need the service but are not capable of paying the top-ups (Bailey, 2003).

While the government dominates the provision of education services in most countries, there are initiatives where they can still ensure schooling without actually providing them. For instance, publicly-financed but privately-provided education may be explored, as shown in the 3rd quadrant of Figure 1. These include the provision of vouchers, or private-contracted or funded schools, and private management (or charter schools).

Figure 1. Provision and Finance of Education.

Finance \ Provision	Private	Public
Private	I. Independent private school Private university Home schooling Tutoring	II. User fees Student loans
Public	III. Private-funded Private-contracted Private management (Charter schools) **Market competition (Vouchers)**	IV. Traditional public (state) school Public university

Source: Lewis & Patrinos (2012)

Vouchers on education was devised by Milton Friedman, an economist, to promote competition among schools, and thereby, improve the quality of education, and get rid of schools that are not efficient (Morgan, et al, 2013). Also, public choice theory critics put forward that the provision of goods and services by the government may be conducted better by the market. Public choice theory advocates emphasize that the competition for students would increase the quality of education with the caveat that education is provided based on consumer choice (Denhardt, 2007).

One of the ways to address access to quality education is by looking into the demand-side financing initiatives through the provision of vouchers. Further, this also encourages (low-income/less affluent) families to have more choices where to send their children to school. These initiatives allow private schools to take in excess demand (Patrinos, 2002), and decongest the public schools.

Voucher programs utilize public financing and let the private sector to provide education services. It may be used encourage competition between the public and private schools, which will improve the performance of all schools (Levin, 2002). The engagement of the private sector is deemed to also improve quality of education; as they compete for students, they try to improve the quality while minimizing cost (Lewis & Patrinos, 2012). Further, voucher programs also attract providers to cater for the poor and vulnerable learners.

In the discussion of educational vouchers, Levin notes that four criteria emerge and are highly important for policymakers, namely: (a) freedom of choice; (b) productive efficiency; (c) equity; and (d) social cohesion (Levin, 2002). Programs may emphasize one criterion over another by employing three instruments, namely finance, regulation, and support services.

Freedom of choice is the right of the families to choose the schools that are consistent with their values and child-rearing principles. Further, productive efficiency criterion assumes that the market competition among the schools will maximize education results. Vouchers also address equity, wherein it improves access to education opportunities, and it is deemed to equip the learners to become participants in institutions of the society and enhance social cohesion.

In order to improve access to quality basic education, the government of the Philippines have implemented voucher programs, such as the Education Service Contracting (ESC) Program and the Senior High School Voucher Program (SHS VP). These programs also support secondary school students to attend private schools that are contracted with the government.

These programs are under the GASTPE (Government Assistance to Students and Teachers in Private Education) Program, which commenced in 1989 to provide assistance to poor but deserving students who have financial concerns in studying in private schools (Jimenez, et al, 2011). The GASTPE Act was enacted in 1988 through enacted through the Republic Act (RA) 6728, and was expanded through RA 8545 or Expanded GASTPE Act. GASTPE expands access to education in recognition of the complementary roles of private and public schools (Saguin, 2019).

Schools in the Philippines are provided either by: (a) the government (or public schools); and (b) private/non-government/profit organizations (or private schools). Public schools are offered by: (a) DepED; (b) local universities and colleges (LUCs; funding comes from the local government); and/or (c) state universities and colleges (SUCs; funding comes from the state). Private schools are provided by the private sector, and in this paper's context, these may either be: (a) voucher; or (b) non-voucher schools.

The Education Service Contracting (ESC) Program was initiated in 1982, and is enacted and expanded through the GASTPE and Expanded GASTPE Act, respectively. Under said laws, the government, through DepED, shall enter into contracts with private schools, and the government shall shoulder the tuition and other fees of excess students of public schools or "aisle students"[1] (Saguin, 2019) under this program.

Broadly, ESC is a tuition fee subsidy program that provides Grade 6 completers to attend four years of junior high school (JHS) education, from grades 7-10, in private schools. The subsidies are paid directly to qualified

[1] *Aisle students* refer to those that exceed the ideal number of students per classroom or classroom-student ratio (Saguin, 2019).

private high schools with a fixed amount per grantee. The subsidies vary depending on the location of the private high school, such as: (a) National Capital Region (NCR); (b) highly urbanized cities (HUCs) outside NCR; and (c) non-HUCs.

Since School Year (SY) 2017-2018, the annual subsidy per grantee covers the following rates: (a) Php 8,500 to 13,000 (~US$167-277) for grade 7; (b) Php 8,500 to 11,000 (US$167-267) for grades 8 and 9; and (c) Php 7,500 to 10,000 (US$ 148-200) for grade 10. In the same school year, the program has covered 970, 311 grantees in 3,297 private schools. The ESC subsidies in the same school year is around Php 8.3 billion (US$ 159 million) (Saguin, 2019).

The ESC, along with other GASTPE programs, is implemented by the Private Education Assistance Committee (PEAC), which is a trustee of the Fund for Assistance to Private Education (FAPE). DepED provides the funding and provides oversight in policies and guidelines. PEAC certifies the eligible private high schools, determines the slots per school, and forwards billing statements of schools to DepED (Saguin, 2019).

Consequently, DepED implemented the Senior High School Voucher Program (SHS VP) since school year (SY) 2016-2017, which also marks the first year of mainstreaming the senior high school education (DepEd Order No. 11, series of 2015). This is in response to the enactment of the landmark legislation, namely the RA 10533 or the Enhanced Basic Education Act of 2013.

The SHS Voucher Program provides vouchers/subsidies to eligible junior high school (JHS) / Grade 10 completers who intends to enroll in non-DepEd schools that offer senior high school. All Grade 10 completers from public JHS and those who are ESC beneficiaries are automatically qualified to the program.

The former can receive voucher at full value, while the latter shall receive 80 percent of the full voucher value. Other completers from non-DepED schools may also apply for a voucher subsidy worth 80 percent. Vouchers must be used immediately during the school year following the JHS completion, which shall cover the two (2) years of SHS.

Like the ESC, the SHS VP also aims to decongest the DepEd/public schools. Further, it aims to: (a) increase the number of SHS enrollees and graduates; and (c) reduce or delay the need to construct DepEd SHS facilities and hire teachers (DepEd Order No.11, series of 2015). This program is also deemed to lessen the financial impact of the reduced enrolment of first year students in the universities and colleges during the first two years of implementation of the SHS program. Ultimately, it also provides more choices for enrolment especially for those who do not have enough finances to support their children's education.

By providing vouchers, DepEd engages the private sector to minimize the institutional pressures and capital costs on constructing and equipping classrooms and laboratories. Further, this will increase the quality of the SHS through increasing the variety of providers, which will encourage a more dynamic system of innovation on provision of education services rather than a limited and centralized state educational system.

While non-DepED providers are allowed to charge top-up fees/costs, they shall minimize such by providing additional subsidies or by enjoining the local government units (LGUs) to lessen the impact to less affluent families.

All of the non-DepEd schools with an SHS permit from DepEd can accept students with vouchers. Similar to ESC, these vouchers can be redeemed in any

region, and the value is determined based on the location of the non-DepEd SHS. Also, SUCs and LUCs may only redeem 50 percent of the original voucher value, since these educational institutions already receive funding from the government.

The non-DepEd schools shall redeem the voucher subsidy to DepEd through direct billing, and is not released in cash to the student. Also, the payment they receive upon redemption of vouchers shall be the one with lower value between the voucher and the normal tuition fee.

In a recent conference, DepEd (2019) noted that one in every four (1 in 4) elementary schools is a private schools. Further, almost half of the total number of schools offering JHS, and SHS are private schools, at 40 and 41 percent, respectively.

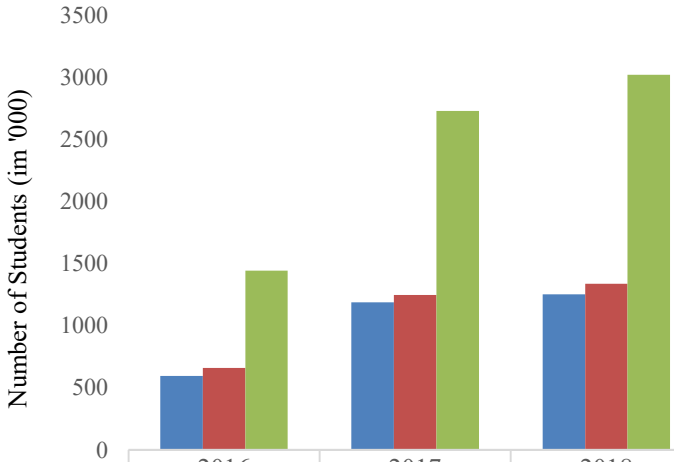
Given the greater number of public elementary schools and JHS, it is imperative that these schools have a greater share in the enrolment of elementary and JHS. In particular, share of enrolment of public elementary school and JHS are at 91 and 82 percent, respectively.

There are also more enrollees in public SHS, at 53 percent of the total enrolment. However, the difference is not as pronounced since the enrolment in private SHS is at 44 percent. The remainder of one (1) and three (3) percent in JHS and SHS are shared by SUCs/LUCs, and private sector organizations.

As of 2018, around 1.25 million students or 94 percent of the enrolled students in private SHSs are voucher program beneficiaries (VPBs) as shown in Figure 2. This accounts for around 80 percent of the target beneficiaries of the SHS VP program.

In its first year of implementation in 2016, the program had around 598,643 VPBs. This coverage is around 90 percent of the private SHS students in the same period, and has increased to 95 percent in 2017 or equivalent to 1.19 million VPBs. The actual (vs target) accomplishment of the program is decreasing from 92 percent in 2016 to 82 and 80 percent in 2017 and 2018, respectively (DepEd, 2019).

Figure 2. Voucher Program Beneficiaries among SHS students: 2016-2018.

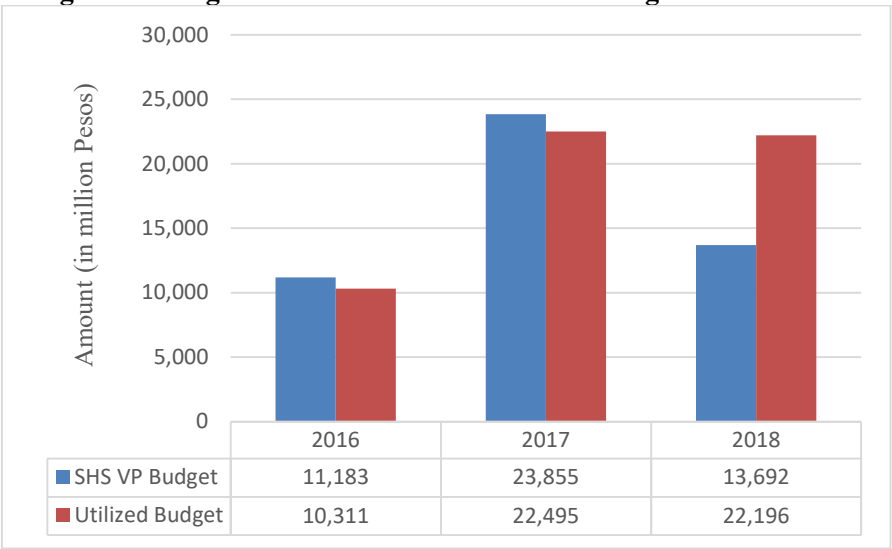


	2016	2017	2018
VPBs	598	1,190	1,255
Total Private SHS students	662	1,249	1,340
Total SHS students	1,445	2,733	3,023

Source: Department of Education (2019)

Figure 3 shows that budget utilization increased from 92 percent (or Php10.31 billion) in 2016 to 94 percent (or Php 22.49 billion) in 2017. It may be noted that while the budget for the program almost doubled in 2017, it was cut by around Php 10 billion in 2018.

Figure 3. Budget Utilization of SHS Voucher Program: 2016-2018.



	2016	2017	2018
SHS VP Budget	11,183	23,855	13,692
Utilized Budget	10,311	22,495	22,196

Source: Department of Education (2019)

1.2 Statement of the Problem

For any intervention in education, it is imperative to look into its effect or impact on education (Lewis & Patrinos, 2012). Hence, this research primarily aims to answer the questions:

1. Does the provision of voucher programs in basic education affect the education outcomes (i.e., net enrolment rates, and cohort survival)?
2. Does the provision of basic education voucher programs affect the market competition in the secondary education in the Philippines, particularly in junior high school and the senior high school?

1.3 Rationale/Significance of the Study

While there is a number of literature on education voucher programs, there remains a dearth of evidence on the effects of voucher programs in the basic education in the Philippines. Thus, this proposed study seeks to provide

literature on the effects of the basic education voucher program on: (a) key education outcomes, namely the net enrolment rates, and cohort survival rate; and (b) competition in the education market in the junior high school and senior high school.

This will, in turn, provide empirical evidence to policy makers as policy information, and may help in improving the basic education programs in the Philippines.

1.4 Scope and Limitation of the Study

The study is limited to the effects of basic education voucher program on competition, and some key education outcomes, such as net enrolment rate and cohort survival rate, as identified in Chapter 3 of this paper. Further, this study does not look into whether the private voucher schools perform better than the non-voucher ones. Also, school choice, sorting, peer-effects, and Tiebout competition will not be covered in the study.

Chapter 2. A Discussion of Theory and Precedent Study Review

2.1 State's Role in the Education System

The government/state is known to provide for public goods, which are non-rival and non-excludable (Stiglitz, 2015). Alternatively, private goods are those that are both rival and excludable. In this definition, education may be identified as a publicly-provided private good, since it is rival (i.e., large marginal cost involved in educating an additional child) and excludable (i.e., private schools) (Stiglitz, 2015; Plank & Davis, 2000). Further, as aforementioned in this paper, Lewis and Patrinos (2012) noted that education may be either financed by the public or private sector, and/or provided by either sectors as well.

Market failures in the market for education rationalize the need for the state to be involved in the education system. These market failures include externalities, information asymmetry, economies of scale, and risk aversion (Plank and Davis, 2020).While there are no objections on the state's role in financing education, concerns on whether the state should provide the education inputs itself or to involve other providers (i.e., private/non-profit actors) arise (Plank and Davis, 2020).

The positive externalities provided by education also justify the need for the state's involvement in the said sector. These include direct benefits in the following: (a) development of civic institutions, namely rule of law, democracy, human rights, political stability; (b) social/societal benefits, like poverty reduction, decline of crime rates, longevity, environmental sustainability, social capital, among others (McMahon, 2004).

Moreover, indirect effects of education include those that affect other variables, and then have a short or long-run effect. For instance, effects of education on better governance, trade and political stability indirectly increases growth (McMahon, 2004).

Critics also argue that the state provision relies on claims of government failure, which include the inefficiency in production and inequity in provision, among others. The absence of competition in a purely state-provided education system weakens the motivation to innovate. In the long-run, competition in the education system may enable schools to be more responsive to parental involvement (Plank and Davis, 2020).

Also, the rent-seeking behavior by educators are put into the spotlight, because some abuse their positions of authority to improve their utility while putting the utility of the students at risk (Plank and Davis, 2020).

As markets may be more efficient and responsive to the parent's preferences, Gintis (1995) proposes that the state's involvement may be necessary so that markets can work efficiently.

Further, the decline of the state's involvement in the national education system may be observed in the case of higher education (Plank and Davis, 2020). The decrease in the support for universities were complemented with an increase in the number and expansion of the variety of higher education institutions (Plank and Davis, 2020).

2.2 Competition in the Education System

On the other hand, the state provision is also deemed less efficient than market provisions, because it reduces competition (Friedman, 1962). Further,

the lack of competition weakens the incentive for innovation and improvement (Plank and Davis, 2020). The dependence on market-based policies could also improve the equity of education system (Howell and Peterson, 2003), by using public financing instead of public provision.

For instance, the Swedish policy reform in the 1990s allowed publicly-funded private schools to function in the high school education. This reform has expanded the number of private schools rapidly.

Firms or schools that function in a non-competitive environment behave differently than those in a competitive one (Borland and Howsen, 1992). Competition in the education system may encourage school management to behave in a manner that is more responsive towards the parents' or students which includes optimization of student's achievement, among others (Borland and Howsen, 1992). Schools may also hire more equipped teachers to enhance the student's achievement, which is usually measured by test scores.

Further, the risk of losing students and resources due to increased competition may also result to more experiments on modifying pedagogical methods (Sandstrom and Bergstrom, 2005). The existence of low quality public schools may also increase the demand for private schools (Sandstrom and Bergstrom, 2005). In addition, public schools in Czech Republic that face private competition also spend a larger proportion of their budget on classroom instruction and in significantly reducing class sizes (Filer and Munich, 2011).

Hoxby (2000) found out that higher public school competition, which is measured by concentration of local districts in an education market, may lead to lower costs and improved educational outcomes. In particular, improvement

in performance, resulting from competition, can increase the achievement in public schools (Hoxby, 2000).

Further, Hoxby (1994) and Dee (1998) found that student outcomes (i.e. educational attainment, graduation rates, test scores) are better in areas where there are higher competition from the private sector (Taylor, 2000). Said authors defined competition as the "private share of educational enrolment in the county" (Taylor, 2000).

Competition can arise based on the following: (a) ownership of the school (either private or public); (b) structure of public schools in a school district; and (c) the structure and geographic boundaries of school districts, among others (Payne, 2010).

In measuring competition, a number of studies use direct measures, such as concentration ratios or Herfindahl-Hirschman indices (HHIs) on enrolment shares. HHI is the sum of squares of the share of total enrolment for each school district, and has a value between 0 to 1 (Payne, 2010). As the numerical value reaches 1, there is lesser competition; the lower index means greater competition (Payne, 2010). Some studies handle competition symmetrically from public and private schools using the said index, while others use private enrolment share to measure competition (Taylor, 2000).

A study by Borland and Howsen (1993) found out that the critical level of concentration in the education sector using the HHI is at 0.50. This was estimated by generating a switching point in discontinuously switching regression regimes. This critical point means that values above 0.5 are classified as non-competitive, and those below 0.5 are competitive, with respect to the student achievement (Borland and Howsen, 1993). In particular, those

education markets or areas that have an HHI of 0.5 or above can assume that there may be a 1.6 percentage-point decrease in student achievement scores, than those with HHI below 0.50.

Payne (2010) notes, however, that the concentration of districts may be endogenous, and may produce bias results. This may show that there is no competitive effect in areas that have more school districts.

School districts in metropolitan areas that have an HHI of more than 0.27 are twice as *allocatively inefficient* as school districts with less-concentrated markets (Taylor, 2000), as observed in the study of Grosskopf et al. (1997). According to them, "*allocatively* efficient school district chooses its combination inputs so that all inputs have the same marginal product per dollar (Grosskopf et al., 2001)."

Other methods to measure competition were also generated and utilized by several authors as alternatives to HHI. These include indices that use data based on the location of schools.

Misra and Chi (2011) used a gravity-based index to measure public school competition from private schools. The index considers factors, such as the number of competitors, their sizes, and the distances between local competitors to measure competition.

Hoxby (2000) utilized the natural contours of the land to identify the number of districts in an area. Her study show that there is a strong association between stream measures and concentration of the school districts.

On the other hand, using a machine-readable data, Rothstein (2007) failed to show that there is a significant effect of school competition on student's performance.

Nechyba (2000) propose that if competitive mechanisms are strong, more competition through the non-traditional school markets can overcome equity concerns.

Voucher designs vary depending on the motivation behind them. Flat-rate modest vouchers are deemed to increase the efficiency by increasing competition, as proposed by Friedman. Others propose means-tested vouchers, which promote equity by means of providing better educational opportunities to low-income families (Zimmer and Bettinger, 2010).

One of the immediate effects of the implementation of vouchers is that some families would rather choose private schools than public schools. Raganzas (1997) notes that vouchers may decrease the responsiveness of public education demand to quality through the modification of the marginal households who are indifferent between public and private education.

Students from: (a) low-income families that were forced to attend low-quality public schools; and/or (b) with higher socioeconomic status and have greater access to information or preference on school quality may be the first ones to transfer to private schools (McEwan, 2000). The introduction of vouchers may also change the residential decisions of families, which is explained by Tiebout sorting (Nebycha, 2006).

While school vouchers are effective in expanding access in education, Baum (2018) notes that vouchers have been effective in providing incentives

for entrepreneurs to establish schools in selected developing countries. For instance, the Swedish reform increased the number of private schools (Sandstrom and Bergstrom, 2005). Epple and Romano (1998) showed that tuition vouchers increased the private sector suppliers of education.

However, high-quality schools only join the market if the subsidy are high enough (Sanchez, 2018). For instance, in Chile, 62 additional private-school vouchers join the program when the targeted voucher increased from $200 to $400, and 60 when the voucher was adjusted to $600 (Sanchez, 2018). It may be helpful to note that the proportion of students attending these private school was still small at four (4) percent (Payne, 2010).

Several studies also show that private schools are expected to exist when public schools have lower quality (Filer and Munich, 2011). Further, if the education system opens up for additional providers, the increase in number and variety of schools that are available for poor households may also increase (Plank and Davis, 2020). This may increase the choices to have more and better choices.

Consequently, some studies show that there are no evidence that link competition and quality (McEwan, 2000), while a study by Gallego (2005) on Chile' voucher program showed that an entry of a voucher school in the market has positive effect on test scores.

Termes et al. (2020) showed that competition is non-existent in the local education market in Manila, Philippines. They used a sociological approach and found that key educational actors respond to social contexts.

There is also some evidence that those who come from a lesser/worse socioeconomic background acquires less benefits from competition, compared to an average student (Sandstrom and Bergstrom, 2005). Interestingly, these students are not hurt by competition.

Based on case studies in the Ohio and Florida in the United States, Bozzo (2017) found that voucher systems are effective in improving the performance on the lowest and highest (or worst and best) performing public school students. Also, in the same study, the voucher program has the most impact in the most competitive school districts that tackle the most significant financial pressures (Bozzo, 2017). Schools that face competition because of vouchers do not seem to be subjected to decline in student test scores; they even have improved test scores (Bozzo, 2017).

Epple and Romano (1998) convey that the largest losses from a voucher program are attributed to students who stays in the high-ability public school track. This is because the voucher program lets the most-able students to transfer from the high track into the private sector. They also note that the voucher may have "very little impact" on the low-income, low-ability students.

2.3 Evaluation of Vouchers in Different Countries

The voucher programs of Chile and Colombia are two of the most extensive voucher programs. However, the universality of Chile's voucher program makes it difficult to identify treatment and control groups (Morgan, et al, 2013); hence, relative effectiveness of public and private schools under the voucher policy is studied. Results show that voucher students who attend private schools have better educational outcomes than those who attend public schools (Morgan, et al, 2013; Contreras, 2002).

Researches that are non-experimental show that Chile's voucher program increased social segregation, since the best students eventually moved to the private schools. Using propensity score-based methods, students in private voucher schools of *Sociedad de Instruccion Primaria (SIP),* have better outcomes than those in public voucher schools in Chile (Henriquez, et al, 2012).

Also, while the Chilean voucher system was available for all students, those from the poorest families were more likely to attend voucher schools (Rounds, 1996).

Hsieh & Urquiola (2006), and Bravo, et al. (2010) used Ordinary Least Squares (OLS) regression methods to: (a) analyze panel data to measure impact of voucher program on average test scores; and (b) develop a model on school attendance and decisions on work where vouchers may be employed, respectively. The first study showed: (a) there were no effect that choice has improved education outcomes, such as test scores, repetition rates, and years of schooling; (b) the program led to increased sorting because the best/performing students in the public school left their schools for the private voucher schools.

Hsieh and Urquiola (2003) also found that using test scores and repetition rate, there is no evidence on the reallocation of students from public to private schools.

Further, the same authors suggest that more well-off families took advantage of the voucher programs. The transfer of students from public to private schools may be attributed to the result that private schools are more effective than public schools (Zimmer and Bettinger, 2010).

Choice programs, like vouchers, makes a way to for preferences between schools and parents to be aligned. Lewis and Patrinos (2012) notes that parents will enroll their children in high-performing schools if they were given a choice.

Since the high-quality students may have exited from public schools, the students left in said schools may experience worse education outcomes because of the absence of their peers (Zimmer and Bettinger, 2010). Also, if the programs do not allocate the benefits in a random manner, the children leaving the low-performing schools are deemed to be the more able students (Lewis and Patrinos, 2012; Nechyba, 2000). In this regard, the best students go to the high-performing schools, and the low-performing schools retain the low-performing ones (Lewis and Patrinos, 2012).

Cullen et al. (2006) was not able to show evidence that "greater school choice results to better student performance (Payne, 2010). Their study shows that better performance due to competition, via more choice, provides a platform to best improve the delivery of education. In particular, the quality of information that schools have in informing that they can promote better outcomes can improve matching the students and the schools that they attend in.

Gallego (2005) used an instrumental variable to estimate the effects of Chile's voucher program. His study show the positive effects of the voucher program on the education outcomes in municipalities where the voucher program is more accessible.

Bravo et al's (2010) study suggests that Chile's voucher program has large effects on graduation rates and attendance to college, and lower labor force participation for high school and college-aged students (Morgan, et al, 2013).

Contreras (2002) used the availability of schools at the community as an instrument for school choice to obtain two-stage least square (TSLS) estimates. The study notes that usual OLS estimates are biased because they don't control the endogeneity (or when an explanatory variable is correlated with the error term). The study further notes that the impact of attending a private voucher school than a public school doubles than the OLS estimates.

In one of the studies on the voucher-like system in Czech Republic showed that parents with more earnings and higher education attainment choose private schools for their children. Further, the school's ability to improve learning is deemed to be limited in voucher programs with inclusive eligibility. This may be because of factors that are beyond of the school's control, namely: (a) qualified teachers; (b) availability of learning inputs (e.g., textbooks, classrooms); and (c) pedagogical traditions (Gauri & Vawda, 2003).

In programs like the SHS VP where benefits are not allocated randomly, those learners who leave low-performing schools are more able students. This means that the average quality of recipient schools may rise or fall (Lewis & Patrinos, 2012).

Also, the problem on sorting bias may arise since students self-selects into the program. For instance, students from better informed households may have a higher probability of enrolling into the program; hence, the different characteristics of families may also serve as moderating variable.

Lara, Mizala & Repetto (2011) used propensity-score-based econometric techniques and difference-in-differences (DID) estimation methods to determine the impact of voucher on students who undergo structural switches

or enrolling in a different school. The study show that voucher education leads to small and several not statistically significant differences in academic performance.

Lewis and Patrinos (2012) notes that selection bias may arise as a problem in the estimation of the impact of choice programs. Further, sorting bias may also affect the treatment estimates on test scores and other outcomes.

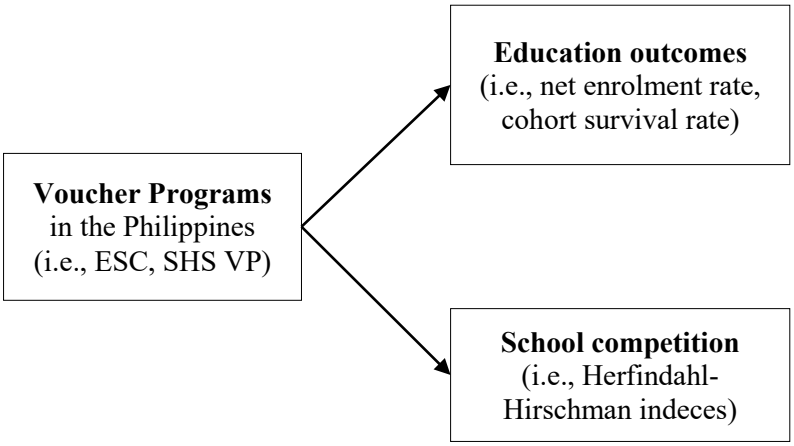
While academic performance can be improved by vouchers, there is unclear evidence whether public or private schools do better. Further, there are also studies which show that vouchers seem to attract the *better* performing students; thus, improving the learning outcomes of private voucher schools (3IE, 2010).

Chapter 3. Research Hypothesis and Methodology

3.1 Analytical Framework

The study is analyzed used the framework in Figure 4. The independent variable/s or the treatment in the study are the basic education voucher programs. This will be represented by: (a) number of voucher beneficiaries; (b) total amount of grant; (c) number of schools with voucher beneficiaries; (d) proportion of ESC beneficiaries over total enrolled population; (e) proportion of schools with ESC beneficiaries over total number of JHS schools; and (f) proportion of schools with ESC beneficiaries over total number of private JHS schools.

Figure 4. Analytical Framework on the Effects of the Voucher Program on Education Outcomes.



The dependent variable in the study are: (a) level of competition (using Herfindahl-Hirschman index) among public and private schools per region; and (b) education outcomes. The unit of analysis will be the 17 regions of the

Philippines, and period to be analyzed will be from SYs 2013 to 2020 (and may be adjusted accordingly, depending on the availability of data).

3.2 Hypotheses

With all of these, the hypotheses of the proposed study are the following:

1. Does the provision of voucher programs in basic education have an effect on the education outcomes (i.e., net enrolment rates, and cohort survival rates)?

   Hypothesis 1: The basic education voucher programs in the Philippines has significant effect on education outcomes.

2. Does the provision of voucher programs in basic education have an effect on the competition among private and public schools?

   Hypothesis 2: The basic education voucher programs in the Philippines has significant effect on competition.

3.3 Data

The study utilizes secondary data obtained from the Philippines' Department of Education (DepED) Planning Service. The data covers the school years (SYs) 2013 up to 2020 for most of the variables, and disaggregated per region, which is the unit of analysis of the study. The data is a short panel (wide, but with a few time periods; N>T). While the program says it is balanced, there are missing data points in some variables, which will be discussed later.

The data were mainly culled from the following datasets: (a) Historical Enrolment by Region School Years (SYs) 2013 to 2019, Junior High School (JHS), and Senior High School (SHS); (b) Historical Number of Schools for

SYs 2013-2019 by Level of Education; (c) Educational Service Contracting (ESC) Guarantees Billed SYs 2013-2020; (d) SYs 2013-2019 Performance Indicators by Region; and (e) Senior High School Voucher Program (SHS VP) Billing Statements Submitted to DepEd SY 2016-2020.

The data used for the ESC program is from SYs 2013 to 2020. For SHS VP, the data utilized is from 2016 to 2019. This is because the senior high school started its implementation on SY 2016 to 2017.

The independent variable in the study is the voucher programs in the Philippines, which is measured and represented by the following indicators: (a) number of voucher beneficiaries; (b) total amount of grant; (c) number of schools with voucher beneficiaries; (d) proportion of ESC beneficiaries over total enrolled population; (e) proportion of schools with ESC beneficiaries over total number of JHS schools; and (f) proportion of schools with ESC beneficiaries over total number of private JHS schools. These are disaggregated per region and year.

However, it may be noted that the following data are not available/was not provided by DepED: (a) number of schools with ESC beneficiaries for four SYs (i.e., SYs 2013-2016, 2018-2019); (b) the number of schools with SHS VP beneficiaries for three years (SYs 2016-2018, 2019-2020); and (c) SHS grant amount for SY 2017-2018.

Consequently, the dependent variables in the study are: (a) education outcomes; and (b) school competition. Second, the performance indicators used in this study are limited to net enrolment rates and cohort survival rates. Both indicators are available for the JHS for the SYs 2013-2019 (six SYs). On the

other hand, only net enrolment rates for SYs 2016 to 2019 (three SYs) is available for SHS.

3.4 Methodology

Since the level of competition is not readily available, it was computed in this paper. It is represented by the Herfindahl-Hirschman index (HHI) of net enrolment shares. HHI is usually used to measure the competition in an industry (Borland and Howsen, 1992). Its value ranges from zero to one, where an index of 1 means that the structure of the educational market approaches to be a monopoly (Borland and Howsen, 1992; 1996), while an index of 0 means the market is in perfect competition.

The HHIs are also evaluated using the critical point developed by Borland and Howsen (1993), which is HHI = 0.5. This means that values above 0.5 are classified as non-competitive, and those below 0.5 are competitive.

In this paper, the share of enrolment, S_{ijr} , for private schools is generated using equation (3), where E_{ij} is the private school enrolment for the i^{th} grade in the j^{th} region.

$$S_{ijr} = \frac{E_{ij}}{\sum_{i=1}^{j} E_{ij}} \quad (3)$$

Equation (4) shows the computation for the index using the sum of squares of S_{ijr} for the private. The sum of squares gives a normalized value for HHI (Naldi and Flamini, 2014).

$$HHI_{ijr} = \sum_{i=1}^{n} S_{ijr}^2$$

(4)

In summary, three (3) main HHI indices were generated using the squares of the private school enrolment share (nominator) and sum of different enrolment categories (denominators) for SYs 2013-2020[2], which are shown in Table 3.1.

Table 3.1. Computation of Herfindahl-Hirschman indeces (HHIs).

Herfindahl-Hirschman indeces (HHI)	**Private enrolment** share(nominator)	**Relative to** (denominator)
HHI 1	Total Enrolment Share in Private JHS, SHS	Total Enrolment Share in JHS, SHS
HHI 2	Total Enrolment Share per Grade Level in Private JHS, SHS	Total Enrolment Share in JHS, SHS
HHI 3	Total Enrolment Share per Grade Level in Private JHS, SHS	Total Grade Level Enrolment Share in JHS, SHS

The effects of the basic education voucher programs in the Philippines on education outcomes and school competition was analyzed using panel data analysis.

First, multiple regression analysis (Payne, 2010) using pooled OLS are generated, as shown in general equations (1) and (2):

$$E_i = \alpha + \beta_i V_i + \varepsilon \quad (1)$$

$$C_i = \alpha + \beta_i V_i + \varepsilon \quad (2)$$

[2] School Years (SYs): (1) 2013-14; (2) 2014-15; (3) 2015-16; (4) 2016-17; (5) 2017-2018; (6) 2018-2019; and (7) 2019-2020.

In these equations, i is the regions in the Philippines, t is the year, E represents the education outcomes (i.e., net enrolment rate, and cohort survival rate), V is the independent variables on the voucher program, C is the level of competition that schools face competition from other schools that is represented by the Herfinadahl-Hirschman index or HHI, and ε is a residual term to capture other factors that affect the E or C. These pooled OLS regressions are generated and are tested for heteroskedasticity, among others, and are adjusted accordingly.

Second, the Breusch and Pagan Lagrangian multiplier test for random effects (hereafter, B-P LM test) was conducted to verify if the random effects model is more appropriate to use than the pooled OLS. The null hypothesis for B-P LM test is that all variances in the model is zero. This is rejected when the probability of the chi-square statistic is less than 0.01. Similarly, the F-test was also carried out to determine whether the probability of F. The null hypothesis for the F-test means is that individual intercepts are equal to zero (Park, 2011), and is rejected when the p-value of the F-statistic is less than 0.01.

Should both tests be significant, a Hausman test was done to check which is more apt to use. Table 3.2 shows a summary of the hypothesis testing using the said tests.

Table 3.2 Choosing between Pooled OLS, Fixed Effects, and Random Effects Model

Fixed effect (F test)	Random effect (B-P LM test)	Selection
H_0 is not rejected (No fixed effect)	H_0 is not rejected (No random effect)	Pooled OLS
H_0 is rejected (fixed effect)	H_0 is not rejected (No random effect)	Fixed effect model
H_0 is not rejected (No fixed effect)	H_0 is rejected (random effect)	Random effect model
H_0 is rejected (fixed effect)	H_0 is rejected (random effect)	Choose a fixed effect model if the null hypothesis of a Hausman test is rejected; otherwise, fit a random effect model.

Source: Park (2011)

Chapter 4. Presentation of Data and Analysis

4.1 Data Summary

This section discusses some summary statistics on the independent and dependent variables used in this study.

4.1.1 Independent Variables

The Philippines has around 938,222 beneficiaries per year under the ESC Program for the school years 2013 to 2020. This costs approximately Php 7.56 billion annually for the same period. Further, since the implementation of the SHS VP in SY 2016 until 2020, there are 1,037,850 beneficiaries costing around Php 16.002 billion annually, on the average.

4.1.1.1 Number of Voucher Program Beneficiaries

Table 4.1.1 shows that there are around an average of 55,190 beneficiaries per region for SY 2013 to 2020 under the ESC Program. The minimum and maximum number of beneficiaries ranges from 18,055 (BARMM) to 184,515 (Region IV-A). Further, Regions III and IV-A, which are near the National Capital Region (NCR), record the highest average number of beneficiaries for the said period at 126,924 and 146,274, respectively, while, BARMM records only 23,021 beneficiaries on the average. Regions III, IV-A, and NCR have the highest enrollment through the years; hence, there are more voucher beneficiaries allotted in these regions. BARMM has the least enrolment through the years; thus, the lesser number of beneficiaries.

Table 4.1.1. Summary Statistics: Number of ESC Beneficiaries, by Region, SYs 2013 to 2020

Region	Mean	Min	Max
I	58,533	55,612	60,574
II	38,364	37,789	39,511
III	126,924	102,338	144,161
IV-A	146,274	103,434	184,515
IV-B	26,361	25,820	27,149
V	52,060	46,437	56,543
NCR	80,867	49,868	108,329
CAR	27,362	26,720	28,095
VI	60,395	44,548	70,576
VII	81,288	64,734	95,217
VIII	29,097	28,411	30,357
IX	23,766	21,479	26,635
X	49,169	41,587	54,886
XI	44,005	38,080	49,674
XII	48,384	46,584	49,576
XIII	22,351	20,445	25,245
BARMM	23,021	18,055	27,278
Total	**55,190**	**18,055**	**184,515**

Consequently, there are around 63,963 beneficiaries annually per region under the SHS VP from 2016 to 2020. NCR and Region IV-A have the most number of SHS VP beneficiaries at 166,050 and 151,899, respectively. BARMM also has the lowest average number of SHS VP beneficiaries at 12,581. It can also be observed that Regions II and the Cordillera Administrative Region (CAR), which are both in Luzon have maximum values at 242,777 and 168,884, respectively. Similarly, NCR and Region IV-A also have more beneficiaries than other regions, given the higher enrollment in the said regions.

It may be observed that the beneficiaries are distributed by principle of equality than equity. In particular, in regions where there are more enrollees have more beneficiaries. Consequently, the same is true with number of schools and the total voucher amounts.

Table 4.1. 2. Summary Statistics: Number of SHS VP Beneficiaries, by Region, SYs 2016 to 2020

Region	Mean	Min	Max
I	34,940	25,682	43,766
II	77,375	15,798	242,777
III	106,715	27,131	169,410
IV-A	151,899	47,056	245,845
IV-B	28,755	12,051	66,954
V	49,372	21,910	94,643
NCR	166,050	56,764	262,457
CAR	56,532	13,296	168,884
VI	42,256	21,823	62,974
VII	62,156	31,147	91,364
VIII	27,297	15,095	48,629
IX	34,530	18,911	62,547
X	38,892	24,943	47,042
XI	40,921	22,296	60,456
XII	89,408	21,849	259,886
XIII	18,172	13,386	21,940
BARMM	12,581	7,412	19,311
Total	**61,050**	**7,412**	**262,457**

4.1.1.2 Total Amount of Voucher Grant

Consistent with the number of voucher beneficiaries, Region IV-A and Region III has the highest average total voucher grants per region at Php 1.151 billion and Php 990.098 million, respectively, for SYs 2013 to 2020. Further, BARMM remains to have the lowest total voucher amount among the regions at Php172.97 million.

Similarly, NCR has the highest average grant amount per region from 2016 to 2020[3] at Php 4.208 billion due to the number of voucher beneficiaries in the region. Further, it might also be because NCR has highly urbanized cities or HUCs, which have higher voucher amount per person. Further, this average grant amount under the SHS VP in NCR is higher than the average total grant amount per region, which is at Php 941.296 million. On the other hand, among

[3] No data for SY 2017-18

the regions, BARMM has the least average total amount of grant for the same period at only Php 148.67 million.

Tables 4.1.3 and 4.1.4 show the summary statistics of the natural log of total voucher amounts under ESC program from SYs 2013 to 2020, and SHS VP from SY 2016 to 2020. It may be seen that Regions III, IV-A, and NCR have the highest average voucher amounts. These are the regions with the most number of beneficiaries and enrollees, as well.

Table 4.1.3. Summary Statistics on Natural Log of Total Voucher Amount under ESC, by Region, SY 2013 to 2020

Region	Mean	Min	Max	SD
I	19.91	19.64	20.09	0.17
II	19.48	19.26	19.68	0.16
III	**20.68**	20.26	20.98	0.27
IV-A	**20.81**	20.27	**21.22**	0.35
IV-B	19.11	18.87	19.30	0.16
V	19.79	19.46	20.03	0.21
NCR	**20.56**	20.03	21.03	0.36
CAR	19.16	18.90	19.37	0.17
VI	19.94	19.67	20.30	0.27
VII	20.24	19.79	20.55	0.29
VIII	19.21	18.98	19.41	0.17
IX	19.02	18.69	19.33	0.24
X	19.74	19.35	20.04	0.25
XI	19.64	19.26	19.98	0.26
XII	19.72	19.50	19.91	0.15
XIII	18.95	**18.64**	19.25	0.24
BARMM	18.96	18.82	19.11	0.10
Total	19.70	18.64	21.22	0.63

For SHS, the same regions have the highest voucher amounts, since they also have the most number of voucher beneficiaries. Further, NCR has the greatest voucher amount because the region has higher voucher rates for ESC and SHS VP.

Table 4.1.4. Summary Statistics on Natural Log of Total Voucher Amounts under SHS VP, by Region, SY 2016 to 2020

Region	Mean	Min	Max	SD
I	19.95	19.07	20.41	0.76
II	19.49	18.61	19.94	0.76
III	**21.22**	20.3	21.76	0.8
IV-A	**21.6**	20.68	22.14	0.8
IV-B	19.18	18.34	19.7	0.74
V	19.86	18.95	20.43	0.79
NCR	**21.99**	21.07	22.47	0.79
CAR	19.5	18.51	20.12	0.87
VI	20.19	19	20.82	1.03
VII	20.75	19.98	21.19	0.66
VIII	19.44	18.55	19.9	0.77
IX	19.72	18.86	20.17	0.75
X	20.02	19.1	20.54	0.8
XI	20.3	19.4	20.81	0.78
XII	19.88	18.98	20.41	0.78
XIII	19.35	18.51	19.8	0.73
BARMM	18.56	17.8	19.52	0.88
Total	**20.06**	**17.8**	**22.47**	**1.09**

4.1.1.3 Number of schools with ESC beneficiaries

Table 4.1.5 shows the summary statistics on the number of schools with ESC beneficiaries by region, however, DepED was not able to provide data for SY 2018-2019. The said table shows that there are approximately 20 schools with ESC beneficiaries per region. BARMM has the least number of schools with ESC beneficiaries at only 17.8, which is below the computed regional average. Conversely, NCR has the most number of schools with ESC beneficiaries.

This is consistent with the number of schools per region, where BARMM has the least number of schools, and Regions III, IV-A, and NCR have the most number of schools in the country.

Table 4.1.5. Summary Statistics on Number of Schools with ESC beneficiaries, by Region, SYs 2016-2018, and 2019 to 2020

Region	Mean	Min	Max	SD
I	19.95	19.07	20.41	0.76
II	19.49	18.61	19.94	0.76
III	21.22	20.3	21.76	0.8
IV-A	21.6	20.68	22.14	0.8
IV-B	19.18	18.34	19.7	0.74
V	19.86	18.95	20.43	0.79
NCR	21.99	21.07	**22.47**	0.79
CAR	19.5	18.51	20.12	0.87
VI	20.19	19	20.82	1.03
VII	20.75	19.98	21.19	0.66
VIII	19.44	18.55	19.9	0.77
IX	19.72	18.86	20.17	0.75
X	20.02	19.1	20.54	0.8
XI	20.3	19.4	20.81	0.78
XII	19.88	18.98	20.41	0.78
XIII	19.35	18.51	19.8	0.73
BARMM	18.56	**17.8**	19.52	0.88
Total	**20.06**	**17.8**	**22.47**	**1.09**

4.1.1.4 Proportion of ESC beneficiaries over total JHS enrolment

The proportion of ESC beneficiaries relative to the total enrolled population was computed by dividing the number of ESC beneficiaries with the total enrolled students in JHS. On average, there are 12 ESC beneficiaries for every 100 enrolled student in JHS as shown in Table 4.1.6. However, there was a period where CAR had around 21 ESC beneficiaries for every 100 enrolled students in JHS. Alternatively, NCR also had the lowest proportion of ESC beneficiaries to the total JHS enrolment at 5 ESC beneficiaries per 100 JHS students.

Table 4.1.6. Summary Statistics on the Proportion of ESC beneficiaries relative to total JHS enrolment, by Region, SYs 2013- 2020.

Region	Mean	Min	Max	SD
I	0.15	0.14	0.15	0
II	0.15	0.14	0.16	0.01
III	0.15	0.13	0.16	0.01
IV-A	0.13	0.1	0.15	0.02
IV-B	0.1	0.1	0.11	0.01
V	0.1	0.1	0.1	0
NCR	0.09	**0.05**	0.12	0.02
CAR	0.21	0.2	**0.21**	0.01
VI	0.1	0.08	0.11	0.01
VII	0.13	0.12	0.16	0.01
VIII	0.08	0.07	0.08	0
IX	0.09	0.08	0.09	0
X	0.14	0.14	0.15	0.01
XI	0.12	0.12	0.13	0
XII	0.14	0.13	0.16	0.01
XIII	0.1	0.1	0.11	0
BARMM	0.12	0.1	0.15	0.02
Total	**0.12**	**0.05**	**0.21**	**0.03**

4.1.1.5 Proportion of schools with ESC beneficiaries over total number of JHS schools

This variable was computed by dividing the number of schools with ESC beneficiaries with the total number of JHS schools. On the average, there are around 20 schools with ESC beneficiaries per 100 JHS schools in every region (Table 4.1.7). Region III had only 3 schools with ESC beneficiaries per 100 in one of the time periods, however, the average proportion for this region is at 20 schools with ESC beneficiaries per 100 JHS schools.

Also, on the average, Region IV-A recorded the highest proportion of schools with ESC beneficiaries at 30 schools for every 100 JHS schools in the region. At one point, the same region had around 32 schools with ESC beneficiaries for every 100 JHS schools in the region, which is also more than the overall regional average.

Table 4.1. 7.Summary Statistics on the Proportion of schools with ESC beneficiaries over total number of JHS schools, by Region, SYs 2016-2020

Region	Mean	Min	Max	SD
I	0.26	0.26	0.27	0.00
II	0.21	0.20	0.21	0.01
III	0.20	**0.03**	0.29	0.15
IV-A	**0.30**	0.27	**0.32**	0.02
IV-B	0.16	0.16	0.16	0.00
V	0.15	0.15	0.15	0.00
NCR	0.26	0.25	0.29	0.02
CAR	0.17	0.17	0.18	0.00
VI	0.21	0.18	0.23	0.02
VII	0.19	0.18	0.21	0.02
VIII	0.14	0.14	0.15	0.01
IX	0.16	0.15	0.16	0.01
X	0.24	0.21	0.26	0.02
XI	0.25	0.22	0.27	0.03
XII	0.22	0.20	0.23	0.02
XIII	0.14	0.13	0.14	0.00
BARMM	0.11	0.10	0.12	0.01
Total	0.2	0.03	0.32	0.06

4.1.1.6 Proportion of schools with ESC beneficiaries over total number of private JHS schools

In terms of concentration of schools with ESC beneficiaries relative to the total number of private JHS schools, Region XII recorded the highest on the average, with around 81% of the private JHS schools in the region are schools with ESC beneficiaries (Table 4.1.8). Also, this might mean that the said region also have a few private JHS, hence, the region's higher proportion.

NCR had the lowest average in terms of this variable with only 34 percent, which is more than half of the country's average. This means that there are lesser schools with ESC beneficiaries given that NCR has one of the most number of JHS schools in the country.

Table 4.1.8. Summary Statistics on the Proportion of schools with ESC beneficiaries over total number of private JHS schools, by Region, SYs 2016- 2020.

Region	Mean	Min	Max	SD
I	0.74	0.73	0.76	0.02
II	0.8	0.79	0.81	0.01
III	0.39	0.06	0.56	0.28
IV-A	0.46	0.41	0.49	0.04
IV-B	0.7	0.66	0.73	0.04
V	0.65	0.63	0.67	0.02
NCR	**0.34**	**0.32**	0.37	0.03
CAR	0.56	0.55	0.56	0.001
VI	0.64	0.54	0.7	0.09
VII	0.54	0.52	0.59	0.04
VIII	0.76	0.75	0.77	0.01
IX	0.76	0.74	0.79	0.02
X	0.64	0.63	0.65	0.01
XI	0.69	0.68	0.7	0.01
XII	**0.81**	0.78	**0.83**	0.02
XIII	0.72	0.69	0.75	0.03
BARMM	0.51	0.45	0.56	0.05
Total	**0.63**	**0.06**	**0.83**	**0.15**

4.1.2 Dependent Variables

The dependent variables in this study includes: (a) education outcomes, particularly net enrolment rates, and cohort survival rate; and (b) competition indices represented by HHI. The first two variables are under the category of education outcomes.

4.1.2.1 Education outcomes

a) Net Enrollment Rates (NER)

Despite having an increasing NER over SYs 2013-2019, the Philippines have a low average NER for JHS (average using JHS national NER) at 73.98 percent for the said period. The regions' JHS NER is estimated at 72.3 percent, which is lower than the national average. However, it may be noted that 10

regions have higher average JHS NERs than this average regional NER for JHS for the same period. The lowest JHS is recorded in BARMM at 36.6 %, which means almost only a third whose age are expected to be in JHS are indeed attending JHS.

Table 4.1. 9. Summary Statistics on JHS NER, by Region, SYs 2013-2019.

Region	Mean	Min	Max	SD
I	0.82	0.77	0.88	0.043
II	0.8	0.72	0.87	0.06
III	0.81	0.78	0.85	0.03
IV-A	0.78	0.72	0.86	0.057
IV-B	0.73	0.65	0.8	0.067
V	0.74	0.65	0.83	0.078
NCR	0.81	0.67	0.89	0.073
CAR	0.78	0.72	0.84	0.048
VI	0.75	0.65	0.85	0.086
VII	0.77	0.68	0.88	0.079
VIII	0.72	0.62	0.79	0.075
IX	0.64	0.53	0.74	0.093
X	0.67	0.57	0.79	0.092
XI	0.72	0.6	0.85	0.11
XII	0.67	0.57	0.77	0.084
XIII	0.73	0.61	0.86	0.099
BARMM	0.37	0.3	0.53	0.086
Total	**0.72**	**0.3**	**0.89**	**0.13**

For SHS, the national NER for SYs 2016-2019 is at 44.91 percent, while the computed mean SHS NER of the regions is at 42.04 percent as shown in Table 4.1.10. Eight (8) regions have SHS NER higher than this computed average regional NER for SHS. On the other hand, BARMM still lags in terms of SHS NER, with only 8.6 percent of its SHS-aged population are enrolled in SHS. It may be noted that the enrolment for SHS was higher than expected in 2016, when the SHS was first implemented.

Table 4.1.10. Summary Statistics on SHS NER, by Region, SYs 2016-2019.

Region	Mean	Min	Max	SD
I	0.59	0.51	0.64	0.067
II	0.50	0.43	0.56	0.065
III	0.55	0.48	0.60	0.062
IV-A	0.53	0.46	0.58	0.065
IV-B	0.42	0.35	0.48	0.066
V	0.38	0.28	0.46	0.088
NCR	0.62	0.55	0.69	0.067
CAR	0.48	0.40	0.54	0.069
VI	0.42	0.33	0.50	0.088
VII	0.45	0.36	0.53	0.088
VIII	0.36	0.28	0.43	0.076
IX	0.30	0.24	0.36	0.061
X	0.36	0.29	0.42	0.065
XI	0.38	0.30	0.46	0.078
XII	0.35	0.27	0.42	0.074
XIII	0.37	0.28	0.44	0.082
BARMM	0.086	0.06	0.11	0.025
Total	0.42	0.06	0.69	0.14

b) Cohort Survival Rate (CSR)

Cohort Survival Rate (CSR) refers to "percentage of enrollees at the beginning grade or year in a given school year who reached the final grade or year of the junior high school education." As of writing, CSR is only available for JHS. Hence, it may not possible to do regression analysis using the SHS CSR with the independent variables mentioned in the previous section of this Chapter. According to the Philippine Development Plan 2017-2022, CSR for secondary education has been increasing since 2014. This suggests that wastage in education is decreasing significantly (NEDA, 2019).

The average national CSR is at 83.29 percent, while the computed regional average JHS CSR is at 82.33 percent for SYs 2016-2019, as shown in Table 4.1.11. Only Region IX and BARMM have CSRs that are lower than these

averages for the same period, which are at 77.9 percent and 70.9 percent, respectively.

Table 4.1.11. Summary Statistics on JHS Cohort Survival Rate, by Region, SYs 2016-2019.

Region	Mean	Min	Max	SD
I	0.87	0.83	0.92	0.032
II	0.85	0.82	0.9	0.028
III	0.85	0.81	0.91	0.037
IV-A	0.88	0.81	0.94	0.049
IV-B	0.82	0.79	0.85	0.025
V	0.81	0.77	0.88	0.042
NCR	0.86	0.8	0.93	0.053
CAR	0.83	0.79	0.88	0.029
VI	0.84	0.81	0.89	0.03
VII	0.84	0.78	0.93	0.5
VIII	0.84	0.77	0.93	0.069
IX	0.78	0.7	0.84	0.047
X	0.8	0.73	0.86	0.046
XI	0.81	0.76	0.85	0.031
XII	0.8	0.76	0.86	0.039
XIII	0.8	0.76	0.87	0.043
BARMM	0.71	0.53	0.95	0.15
Total	0.82	0.53	0.95	0.064

4.1.2.2 Competition

The computed values for the HHIs are included in the Appendix of this paper. To reiterate, values closer to 0 are towards

a) HHI 1: Total Private JHS (SHS) Enrollment Share relative to the Total Enrollment in JHS (SHS)

The means of HHI 1.1 for JHS and HHI 1.2 for SHS show that the education market for JHS and SHS in the country are competitive by using the total private JHS and SHS enrollment share, respectively, relative to the total JHS and SHS enrollment. It may be recalled that values are less than the critical point of 0.5 means the market is towards competition (Borland and Howsen, 1993). In particular, the HHI for JHS is at 0.03, while the HHI for SHS is at 0.17.

Table 4.1.12. Summary Statistics on HHI 1.1 JHS (SY2013-20) and HHI 1.2 SHS.

	Mean	min	max	Std. Dev.
HHI 1.1	0.03	0.01	0.08	0.02
HHI 1.2	0.17	0.03	0.72	0.14

For JHS, the least competition is seen in CAR with a mean of 0.07 and maximum value of 0.06. Next to it is Region IV-A with a mean of 0.06, and maximum value of 0.07 (Table 4.1.13). This implies that only 25 percent (square root of the HHI) of the enrollment in JHS in these regions are in private schools. This further denotes that there are still a significant number of enrollees in the public schools.

Table 4.1.13. Summary Statistics on HHI 1.1 (JHS), by Region, SY2013-20.

Region	Mean	Min	Max	SD
I	0.03	0.03	0.03	0.003
II	0.03	0.03	0.04	0.004
III	0.04	0.04	0.05	0.004
IV-A	**0.06**	0.05	**0.07**	0.01
IV-B	0.02	0.01	0.02	0.002
V	0.01	0.01	0.02	0.001
NCR	0.05	0.05	0.06	0.004
CAR	**0.07**	0.06	**0.08**	0.01
VI	0.02	0.02	0.02	0.001
VII	0.03	0.03	0.04	0.004
VIII	0.01	0.01	0.01	0.001
IX	0.01	0.01	0.01	0.002
X	0.04	0.03	0.05	0.01
XI	0.03	0.02	0.04	0.004
XII	0.03	0.02	0.04	0.005
XIII	0.02	0.01	0.02	0.001
BARMM	0.02	0.01	0.03	0.004
Total	**0.03**	**0.01**	**0.08**	**0.02**

For SHS, Region V has an HHI of more than 0.5 denoting that the market for senior high school is more of a monopoly than a competitive market. This implies that the private schools dominate the market, since the enrolment share in the region are higher at around 75 percent of total SHS enrolment. On the other hand, Region VIII has a more competitive market for SHS.

Table 4.1. 14. Summary Statistics on HHI 1.2 for SHS, by Region, SY 2013-20.

Region	Mean	Min	Max	SD
I	0.08	0.07	0.1	0.01
II	0.1	0.08	0.11	0.01
III	0.26	0.25	0.27	0.01
IV-A	0.37	0.35	0.39	0.02
IV-B	0.06	0.05	0.06	0.01
V	**0.59**	0.52	**0.72**	0.09
NCR	0.26	0.24	0.29	0.02
CAR	0.06	0.06	0.06	0.00
VI	0.08	0.08	0.09	0.00
VII	0.18	0.16	0.2	0.01
VIII	**0.04**	**0.03**	0.04	0.00
IX	0.13	0.1	0.16	0.03
X	0.15	0.14	0.15	0.01
XI	0.24	0.21	0.27	0.03
XII	0.12	0.12	0.13	0.01
XIII	0.09	0.07	0.12	0.02
BARMM	0.09	0.08	0.11	0.01
Total	**0.17**	**0.03**	**0.72**	**0.14**

b) HHI 2: Grade Level Private Enrollment Share relative to the Total Enrollment in JHS, SHS

The indices under HHI 2 were computed using the per grade level private enrollment share and the total enrollment in JHS and SHS. This is generated to be able to determine the competition in terms of grade level private enrollment considering the total education enrollment for JHS, and for SHS. Table 4.1.15 shows the summary statistics for HHI 2.1 for JHS, where the means for the HHIs for the different JHS grade levels as well as the average HHI for JHS are

also below the critical level. This implies that the education market in JHS are competitive.

Further, the means of HHI 2 for SHS in Table 4.1.15 also show that there is also competition in SHS using this index. However, it may be noted that the means are slightly higher numerically than HHI 1. In particular, the HHI for Grade 11 is at 0.08, which is higher than the average (HHI 2.2) at 0.04.

Table 4.1. 15. Summary Statistics HHI JHS and SHS, per grade level.

HHI 2	Mean	Min	Max	Std. Dev.
HHI 2 Grade 7	0.002	0.000	0.007	0.001
HHI 2 Grade 8	0.002	0.001	0.008	0.001
HHI 2 Grade 9	0.002	0.000	0.007	0.001
HHI 2 Grade 10	**0.036**	0.009	0.088	0.020
HHI 2.1 (JHS)	0.002	0.000	0.007	0.001
HHI 2 Grade 11	**0.081**	0.008	0.574	0.096
HHI 2 Grade 12	0.036	0.008	0.140	0.029
HHI 2.2 (SHS)	0.042	0.008	0.183	0.036

c) HHI 3: Grade Level Private Enrollment Share Relative to the Total Grade Level Enrollment in JHS, SHS

Table 4.1.16 shows the summary statistics of the computed HHI 3, which utilizes the grade level enrolment share relative to the corresponding grade level enrollment in both JHS and SHS. This is the most similar to the computation of Borland and Howsen (1992).

While the means of all the computed HHI 3 are below 0.5, there are maximum values that hit the critical value of 0.5. The HHI 3 for all the SHS have max values that are more than the critical value. In particular, Annex C.2 shows that NCR have higher HHI values for all 3 HHIs (Grade 11, 12, average). This means that the education market for SHS is not very competitive in NCR,

and is leaning towards monopoly of private schools. This is because some of the top universities offer secondary high school counterparts, particularly for secondary high school.

Table 4.1. 16. Summary Statistics HHI 3 for JHS and SHS, per grade level.

HHI 3	Mean	Min	Max	Std. Dev.
HHI 3 Grade 7	0.03	0.01	0.07	0.02
HHI 3 Grade 8	0.03	0.01	0.08	0.02
HHI 3 Grade 9	0.03	0.01	0.08	0.02
HHI 3 Grade 10	0.04	0.01	0.09	0.02
HHI 3.1 (JHS)	0.03	0.01	0.07	0.02
HHI 3 Grade 11	0.17	0.03	0.57	0.13
HHI 3 Grade 12	0.13	0	0.56	0.13
HHI 3.2 (SHS)	0.15	0.02	0.56	0.12

4.2 Regression Results

This section provides a summary of the results of the panel data analysis performed in the study. Some models include log-log models, while others use level-log depending on the goodness-of fit of the model. Further, the robust or sandwich estimator of variance will be applied once heteroskedasticity are found in the models; provided that BP-LM test shows that pooled OLS must be used.

4.2.1 Education Outcomes

Panel analysis results regarding the effects of the voucher programs on the education outcomes are presented below. Level-log models are used to estimate the effects of voucher programs on education outcomes, such as net enrolment rates and cohort survival rates. The latter is only conducted on JHS because of the lack of CSR for SHS.

4.2.1.1 Effect of Voucher Programs on Net Enrollment Rate (NER)

ESC Program and JHS NER

The result of the Hausman test specifies that random effects model is deemed to be more appropriate in estimating the effects. Table 4.2.1 shows the panel data analysis of the effects of the ESC program on JHS NER. Using the random effects model, the proportion of ESC beneficiaries relative to the enrolled JHS is statistically significant at 0.01 level, but affects the JHS NER inversely. When the said variable increases by 1 percent, the JHS NER decreases by 0.22 percentage points. The proportion of the schools with ESC beneficiaries relative to the total JHS schools also significantly affects the JHS net enrollment rates in a negative manner. For every 1 percent increase in such, the JHS NER decreases by 0.15 percentage points.

On the other hand, the number of beneficiaries, amount of grant, and the proportion of schools with ESC beneficiaries relative to the total private JHS schools are statistically significant at 0.05 level. A 1 percent increase in the number of beneficiaries increases the JHS NER by 0.16 percentage points. Further, when the ESC grant amount increases by 1 percent, the JHS NER increases by 0.17 percentage points. When the proportion of ESC schools relative to the total private schools also increase by 1 percent, the net enrolment rate in JHS also increases by 0.11 percentage points.

Also, by using the table below, the rho means that 99 percent of the entire composite error can be explained by the individual specific error.

Table 4.2. 1. Panel Data Analysis of the Effects of ESC on JHS Net Enrollment Rate.

VARIABLES	**Random effects** (JHS NER)
No. of ESC beneficiaries (ln)	**0.16****
	(0.08)
Amount of ESC grant (ln)	**0.17****
	(0.05)
No. schools with ESC beneficiaries (ln)	-0.09
	(0.08)
Proportion of ESC beneficiaries relative to enrolled JHS (ln)	**-0.22*****
	(0.06)
Proportion of ESC schools to total JHS schools(ln)	**-0.15****
	(0.09)
Proportion of ESC schools to total private JHS (ln)	**0.11****
	(0.05)
Constant	-4,45***
	(0.53)
Observations	34
R-squared	
Number of regions	17
R2 within	0.96
R2 overall	0.11
R2 between	0.11
ρ	0.99
θ	0.97
Effects test	**12.16*****

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

SHS VP and SHS NER

Table 4.2.2 shows the relationship between the SHS VP and the SHS NER. The Hausman test suggests that the **random** effects model is apt in estimating the effects of the SHS VP on SHS NER.

Using the random effects model results in Table 4.2.2, the amount of grant is the only variable deemed significant to affect the SHS NER. When the amount of grant increases by 1 percent, the SHS NER increases by 0.08 percentage points.

Since the amount of voucher grant for the different locations (i.e., NCR, highly urbanized cities, other cities and municipalities) varies, this may be further explored by future researches. In particular, it may be beneficial to explore whether the number of cities and municipalities, as well as highly urbanized cities, affect the NER and other education outcomes. The R^2 within is at 0.98 percent, which may be deemed as the goodness-of-fit for random effects model.

Table 4.2. 2. Effects of SHS VP on SHS NER

VARIABLES	**Random effects** (SHS NER)
No. of SHS beneficiaries (ln)	0.05
	(0.04)
Amount of SHS VP grant (ln)	**0.08*****
	(0.02)
Proportion of SHS VP beneficiaries to total SHS enrollment (ln)	-0.05
	(0.04)
Constant	-1.70***
	(0.09)
Observations	34
Number of Regions	17
SSE	0.02
SEE	0.02
$\widehat{\sigma_u}$	0.09
F Wald	619.13***
Effects test	13.82***
R2 within	0.98
R2 overall	0.64
R2 between	0.53
ρ	0.96
θ	0.87

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.2.1.2 JHS Cohort Survival Rate (CSR)

Due to data availability, it is only possible to run the regression with the cohort survival rates for JHS. Table 4.2.3 provides the effect of ESC program on the cohort survival rates in JHS. The Hausman test shows that the fixed effects model may be considered in estimating the effects of ESC on JHS cohort survival rates. To ensure that the estimates are reliable, the fixed effects model is further subjected to the robust function.

While the coefficients did not change when the model was enhanced, the standard errors and the level of significance have changed. The number of ESC beneficiaries significantly affects the cohort survival rate for junior high school at 0.01 level. In particular, a 1 percent increase in the number of beneficiaries, the JHS cohort survival rate increases by 1.84 percentage points.

Further, using the same model, when the proportion of the ESC beneficiaries (significant at 0.05 level) increase by 1 percent the cohort survival rates decreases by 1.26 points. This finding somehow opposes the previous finding on the number of beneficiaries.

Table 4.2. 3. Panel Data Analysis in the ESC Program on JHS Cohort Survival Rates.

VARIABLES	Fixed effects (JHS CSR)
No. of ESC beneficiaries (ln)	**1.84*** **
	(0.59)
Amount of ESC grant (ln)	-0.47
	(0.30)
No. schools with ESC beneficiaries (ln)	-0.54
	(0.42)
Proportion of ESC beneficiaries relative to total enrolled JHS students (ln)	**-1.26** **
	(0.45)
Proportion of ESC schools to total JHS schools(ln)	-0.04
	(0.46)
Proportion of ESC schools to total private JHS (ln)	0.38
	(0.23)
Constant	**-9.46** **
	(3.40)
Observations	34
R-squared	17
Number of Regions	0.69
SSM	0.02
SSE	0.01
SEE	0.02
AdjR2	0.63
R2 within	**0.69**
R2 between	0.20
R2 overall	0.16

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.2.2 Competition

This section provides the effects of the voucher programs on the different computed competition indices.

a) HHI 1: Total Private JHS and SHS Enrollment Share relative to the Total Enrollment in JHS and SHS

The results of the panel data analysis in Table 4.2.4 shows the effects of the ESC program on the competition among JHS using HHI 1 or the competition index that takes into account the total private JHS enrolment share relative to the total enrolment in JHS. This index is deemed the capture the overall competition in the country. A counterpart for SHS also does the same.

The p-value for Hausman Test is less than 0.01, which means that the null hypothesis is rejected and the **fixed effects** model is more appropriate to estimate the effects of ESC on competition among JHS using HHI 1.

Using the fixed effects model, (a) the number of schools with ESC beneficiaries, and (b) the proportion of ESC beneficiaries relative to total enrolled JHS students have significant effects on the competition in JHS using HHI 1. In particular, when the proportion of ESC beneficiaries relative to the total JHS enrollment increases by 1 percent, the competition index in the private JHS increases by 0.02 percentage points. This implies that the competition moves towards monopoly in the JHS market. Conversely, when there is a 1 percent increase in the number of schools with ESC beneficiaries, the competition index HHI 1 decreases by 0.03 points, which points to more competition.

This is because the number of schools with ESC beneficiaries may also increase the number of enrollees in the private sector.

Table 4.2. 4. Panel Analysis on the Effect of ESC on competition among JHS using HHI 1.

VARIABLES	**Fixed effects** (HHI 1 for JHS)
No. of ESC beneficiaries (ln)	0.03
	(0.02)
Amount of ESC grant (ln)	-0.02
	(0.01)
No. schools with ESC beneficiaries (ln)	**-0.03****
	(0.01)
Proportion of ESC beneficiaries relative to total enrolled JHS students (ln)	-0.01
	(0.01)
Proportion of ESC beneficiaries relative to total enrolled JHS students (ln)	**0.02****
	(0.01)
Proportion of ESC schools to total private JHS (ln)	0.00
	(0.01)
Constant	0.13
	(0.09)
Observations	51
R-squared	0.57
SSE	0.00
Degrees of freedom	28
SSE	0.00
SSM	0.00
Number of Regions	17
SEE	0.001
σ_u	
Effects test	36.83***
θ	
ρ	0.994
R2 within	0.57
R2 between	0.48
R2 overall	0.41

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

For the effects of SHS VP on competition using HHI 1, the Hausman test result shows a chi-statistic of -2.02 and notes that the p-value is less than 0 and fails to meet the asymptotic assumptions of the Hausman test. It may not be concluded that the random effects is more appropriate than the fixed effects model. Thus, the fixed effects may be used to analyze the said model.

Using Table 4.2.5, the number of SHS VP beneficiaries and the proportion of the SHS beneficiaries to total SHS enrollment are both significant at 0.10 level only. When the number of beneficiaries increases by 1 percent, the competition index decreases by 0.35 percent. This implies that the market for SHS becomes competitive. Conversely, when the proportion of the SHS beneficiaries to the total SHS enrollment increases by 1 percent, the competition index increases by 0.37 percent. This means that the market is leaning towards a monopoly, where private SHS enrollment increases as well.

Table 4.2.5. Panel Analysis on the Effect of SHS VP on Competition among SHS using HHI 1.

VARIABLES	**Fixed Effects** (Ln HHI 1 SHS)
No. of SHS VP beneficiaries (ln)	**-0.35*** (0.19)
Amount of SHS VP grant (ln)	0.11 (0.11)
Proportion of SHS VP beneficiaries to total SHS enrollment (ln)	**0.37*** (0.19)
Constant	-0.10 (0.43)
Observations	51
R-squared	0.42
Number of Regions	17
SSE	0.10
df	31.00
SSE	0.29
σ_u	
SEE	
Effects test	**78.34*****
θ	
ρ	0.98
R2 within	0.42
R2 between	0.03
R2 overall	0.01

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

b) HHI 2: Grade Level Private Enrollment Share relative to the Total Enrollment in JHS, SHS

This section looks into the notable combinations of the relationship of the ESC programs and competition using HHI 2. HHI 2 which refers to the private enrollment share per grade level relative to the total JHS and SHS enrollment. In particular, the competition indices that are considered

in this section include the HHI 2 for both JHS and SHS, and the HHI for Grade 7 and 12.

Since all of the statistics are significant at 0.01 level, it is apt to use the fixed effects model in verifying the effects of ESC on competition.

The results of the panel analysis under the fixed effects models in Table 4.2.6 shows that the following variables are significant in estimating the effects of ESC on competition for JHS and Grade 7: (a) number of ESC beneficiaries; (b) number of schools with ESC beneficiaries; and (c) proportion of ESC schools to total JHS schools. The amount of ESC grant affects the competition only in Grade 7 at 0.05 level.

For every 1 percent increase in the number of beneficiaries, the competition increases in JHS and in Grade 7 by 0.002 and 0.004 percentage points, respectively. This implies that the market moves toward monopoly on the overall JHS and Grade 7 market, using HHI 2. Further, the proportion of schools with ESC beneficiaries to total schools have significant effects at 0.01 level. As the said proportion increases by 1 percent, the HHI for JHS and Grade 7 increases by 0.001 and 0.002, respectively.

Also, the said table shows that the amount of ESC grant is significant at 0.05 level. It affects the HHI for Grade 7 by 0.002 decrease for every 1 percent increase in the amount of the ESC grant. This denotes more competition in the said grade level as the amount of grant increases. It may be helpful to look into the effects of the different rates provided for the different locations to further assess this effect.

Table 4.2. 6. Panel Analysis on the Effects of ESC Program on Competition using HHI 2 for JHS.

VARIABLES	(1) **Fixed effects** (HHI 2 JHS)	(2) **Fixed effects** (HHI 2 Grade 7)
No. of ESC beneficiaries (ln)	**0.002***	**0.004***
	(0.001)	(0.002)
Amount of ESC grant (ln)	-0.001	**-0.002****
	(0.001)	(0.001)
No. of schools with ESC beneficiaries (ln)	**-0.002****	**-0.002***
	(0.001)	(0.001)
Proportion of ESC beneficiaries relative to total enrolled JHS students (ln)	-0.001	-0.001
	(0.001)	(0.001)
Proportion of ESC schools to total JHS schools(ln)	**0.001*****	**0.002****
	(0.001)	(0.001)
Proportion of ESC schools to total private JHS (ln)	0.000	0.001
	(0.001)	(0.001)
Constant	0.007	0.016
	(0.006)	(0.009)
Observations	51	51
R-squared	0.571	0.637
Number of Regions	17	17
R2 within	0.57	0.637
R2 overall	0.43	0.350
R2 between	0.53	0.448
ρ	0.99	0.99
Effects test	36.86***	**23.93*****
θ		

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The Hausman test implies that a fixed effects model may be used in estimating the effects of SHS VP on competition using HHI 2. However, it may be noted that for the Hausman test for SHS, the p-value is smaller than 0, however, it fails to meet the asymptotic assumptions of the Hausman test.

Table 4.2.7 below shows the panel analysis for the effects of SHS VP on the competition among SHS schools using HHI 2 for SHS and Grade 12. All of the independent variables are deemed to have significant effects on the competition. These variables are: (a) number of SHS VP beneficiaries; (b) amount of SHS VP grant; and (c) proportion of SHS beneficiaries relative to the total SHS enrollment.

For every percent increase in the number SHS beneficiaries, the competition decreases by 0.05 and 0.03 percentage points in SHS and Grade 12, respectively. This is counterintuitive since the SHS VP was meant to increase the enrollment in the private schools.

Alternatively, when the voucher amount increases by 1 percent, the HHI 2 for SHS and grade 12 increases by 0.006 and 0.005 percentage points, respectively. This implies that the competition approaches monopoly; ergo, there are more students in the private schools. Further, for every 1 percent increase in the proportion of the SHS beneficiaries to total SHS beneficiaries, the competition indices for SHS and grade 12 increases by 0.05 and 0.31 percentage points, respectively.

Table 4.2.7. Panel Analysis on the Effects of SHS VP on Competition using HHI 2 for SHS.

VARIABLES	(2) **Fixed effects** (HHI 2 for SHS)	(5) **Fixed effects** (HHI 2 for Grade 12)
No. of SHS VP beneficiaries (ln)	**-0.05***** (0.01)	**-0.03**** (0.01)
Amount of SHS VP grant (ln)	**0.006**** (0.002)	**0.005*** (0.003)
Proportion of SHS beneficiaries to total SHS enrollment (ln)	**0.05***** (0.009)	**0.03**** (0.011)
Constant	**0.552***** (0.084)	**0.29**** (0.103)
Observations	34	34
R-squared	0.730	0.406
Number of Regions	17	17
R2 within	0.730	0.41
R2 overall	0.243	0.20
R2 between	0.247	0.20
ρ	0.999	0.998
θ		
Effects Test	227.37***	97.72***

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

c) HHI 3: Grade Level Private Enrollment Share Relative to the Total Grade Level Enrollment in JHS, SHS

This section explores the effect of the voucher programs on the competition using HH3. As mentioned before, this competition index is the most similar to the Borland and Howsen (1992). The competition indices for JHS and SHS, as well as those of grade 10 and grade 12

The Hausman test results deem that a fixed effects model shall be used to look into the effects of the ESC program on the competition for JHS and Grade 10.

Using Table 4.2.8, the number of schools with ESC beneficiaries, and the proportion of schools with ESC beneficiaries to the total JHS schools significantly affects competition in JHS. In particular, when the number of schools with ESC beneficiaries increases by 1 percent, the competition for JHS decreases by 0.024, which means that JHS schools become competitive.

For grade 10, four (4) variables are significant, namely: (a) number of ESC beneficiaries; (b) amount of ESC grant; (c) number of schools with ESC beneficiaries; and (d) proportion of schools with ESC beneficiaries to total JHS schools. The first two are significant at 0.10 level, while the other at 0.05 level.

For every 1 percent increase in the number of ESC beneficiaries, the competition index increases by 0.04 percentage points for Grade 10. Also, when the proportion of schools with ESC beneficiaries to the total JHS schools increases by 1 percent, the competition index increases by 0.029 points in Grade 10 and 0.024 in JHS. Both denotes moving towards monopoly.

On the other hand, when the amount of ESC grant increases by 1 percent, the HHI for grade 10 decreases by 0.024 percentage points, which implies more competition. Also, a 1 percent increase in the number of schools with ESC beneficiaries leads to a decrease in the competition index

by 0.028 for JHS and 0.035 for grade 10, which also denotes more competition.

Table 4.2.8. Panel Data Analysis on the Effects of ESC on Competition using HHI 3 for JHS and Grade 10.

VARIABLES	(1) **Fixed effects** (HHI 3 for JHS)	(2) **Fixed effects** (HHI 3 for Grade 10)
No. of ESC beneficiaries (ln)	0.033	**0.044***
	(0.020)	(0.025)
Amount of ESC grant (ln)	-0.015	**-0.024***
	(0.010)	(0.012)
No. schools with ESC beneficiaries (ln)	**-0.028****	**-0.035****
	(0.013)	(0.016)
Proportion of ESC beneficiaries relative to total enrolled JHS students (ln)	-0.012	-0.014
	(0.011)	(0.014)
Proportion of ESC schools to total JHS schools(ln)	**0.024*****	**0.029****
	(0.008)	(0.011)
Proportion of ESC schools to total private JHS (ln)	0.005	0.007
	(0.012)	(0.016)
Constant	0.141	0.234*
	(0.094)	(0.122)
Observations	51	51
R-squared	0.601	0.647
F	36.42***	23.74***
Number of regions	17	17
R2 within	0.601	0.647
R2 overall	0.367	0.35
R2 between	0.426	0.42
ρ	0.995	0.993
Effects Test	36.42***	23.74***

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The diagnostic tests for the effects of SHS VP on competition among SHS schools shows that BP-LM and F-tests are significant at 0.05 and 0.01 levels, respectively. The Hausman shows that while the probability for chi-statistic is less than 0, it has failed to meet asymptotic assumptions for the Hausman test. Hence, F-test may still be used for SHS. On the other hand, the null hypotheses for both the BP-LM and F-tests are not rejected; hence, the pooled OLS shall be used in the analysis for the effects of SHS VP on the competition for Grade 12.

Table 4.2.9 shows the panel data analysis for SHS and Group 12 using HHI 3 or the Grade Level Private Enrollment Share Relative to the Total Grade Level Enrollment in JHS, SHS. For the competition for SHS, the independent variables are not significant under the fixed effects model, which the Hausman said was more apt to use.

On the other hand, the pooled OLS model for estimating the effects of SHS VP on the competition for grade 12 shows that all of the variables are significant at 0.01 level. For instance, a 1 percent increase in the amount of SHS VP grant, increases the competition index for grade 12 by 0.20 points. Further, an increase in the proportion of SHS beneficiaries to the total SHS enrolment also increases the competition index for grade 12 by 0.15 points. Both of these effects entail that the competition for grade 12 moves towards a monopoly.

Conversely, when the number of SHS VP beneficiaries increase by 1 percent, the competition index decreases by 0.17 points, which means that the competition increases in grade 12.

Table 4.2. 9. Panel Data Analysis on the Effects of SHS VP on Competition using HHI 3 for SHS and Grade 12.

VARIABLES	(1) **Fixed effects** (HHI 3 for SHS)	(2) **Pooled OLS** (HHI 3 for grade 12)
No. of SHS VP beneficiaries (ln)	0.002	**-0.17*** **
	(0.071)	(0.037)
Amount of SHS VP grant (ln)	0.05	**0.20*** **
	(0.040)	(0.029)
Proportion of SHS VP beneficiaries to total SHS enrollment (ln)	-0.02	**0.15*** **
	(0.070)	(0.035)
Constant	-0.87***	-1.84***
	(0.161)	(0.262)
Observations	51	51
R-squared	0.591	0.72
F		20.36
SSE		0.24
df		47.00
SSE		0.07
SSM		0.59
adjr2		0.70
Number of Regions	17	
R2 within	0.59	
R2 overall	0.55	
R2 between	0.59	
F-stat	14.90	
ρ	0.83	
θ		
Effects Test	6.68***	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.3 Summarized Results

This section provides a summary of the results that were discussed in the previous section of this Chapter. Specifically, the hypotheses proposed in Chapter 3 will be discussed in this section.

4.3.1 Hypothesis 1: The basic education voucher programs in the Philippines has significant effect on education outcomes.

In general, the voucher program has significant effects on the net enrollment rate and cohort survival rate.

On net enrolment rates (NER)

Using the random effects model, as deemed more appropriate by the Hausman Test, the following variables have significant effects on the JHS net enrolment rates: (a) number of beneficiaries, amount of ES grant; (c) proportion of ESC beneficiaries relative to the enrolled JHS; (d) proportion of ESC schools to the total JHS schools; and (e) proportion of ESC schools to the total private JHS.

Notably, a 1 percent increase in the number of ESC beneficiaries is deemed to result to 0.16 percentage point increase in the JHS NER. Also, when the grant amount increases by 1 percent, the JHS NER also increases by 0.17 percent. This is intuitive since the voucher programs are meant to increase the accessibility of education, and is expected to increase the enrolment. This may be because the voucher program increases the choice and resources of families to enroll their children.

Moreover, when the proportion of schools with ESC beneficiaries relative to the total private JHS schools increases by one percent, the JHS NER increases by 0.11 percent.

In terms of the SHS VP, the amount of the SHS VP grant is deemed to increase the net enrolment rate in SHS. In particular, a 1 percent increase in the amount of SHS VP grant increases the SHS NER by 0.08 percentage points.

On cohort survival rate (CSR)

The ESC is deemed to significantly affect cohort survival rates in junior high school. Using the fixed effects model, only two variables remain significant. These are the number of ESC beneficiaries and the proportion of ESC beneficiaries relative to the total enrolled JHS students. When the number of ESC beneficiaries increases by 1 percent, the JHS CSR increases by 1.84 percentage points.

However, when the proportion of ESC beneficiaries relative to the total enrolled JHS students increases by 1 percent, the JHS CSR decreases by -1.26 percentage points.

4.3.2 Hypothesis 2: The basic education voucher programs in the Philippines has significant effect on competition.

Three HHIs were generated in the study. These are: (a) HH1 or the total private JHS and SHS share relative to the total enrolment in JHS and in SHS, respectively; (b) HHI 2 or the grade level private enrolment share relative to the total JHS and SHS enrolment; and (c) HHI 3 or the grade level private enrolment share relative to the total grade level enrolment in JHS and SHS.

In general, the basic education voucher programs have significant effect on the market competition among private schools in the Philippines. In particular, several variables point that the competition moves towards

monopoly due to the implementation of voucher programs. The following may be observed from the results of the study:

On HHI 1. Using the fixed effects model, the proportion of ESC beneficiaries relative to the total enrolled JHS students significantly affects the competition level for JHS at 0.05 level. For every 1 percent increase in this proportion, the competition index increases by 0.02 points. This makes the competition in JHS move towards monopoly, where the private schools have a large number of the share in enrollment.

Further, the proportion of SHS VP beneficiaries relative to the total enrollment is also significant at 0.10 level. A 1 percent increase in this proportion leads to a 0.37 point increase in the competition index.

On HHI 2. The fixed effects models results show that the number of beneficiaries and proportion of schools with ESC beneficiaries relative to the total JHS schools increase the competition level. For 1 percent increase in the number of ESC beneficiaries, the competition index for JHS and grade 7 increases by 0.002 and 0.004 points. Further, when the proportion of schools with ESC beneficiaries increase by 1 percent, the competition index increases by 0.001 percentage points for JHS and 0.002 percentage points for grade 7.

These implies that the competition level decreases towards monopoly, where private schools have a bigger share of the enrolment in JHS.

For SHS, the amount of grant and the proportion of SHS beneficiaries to total SHS enrollment also significantly affect the competition in SHS and grade 12. For instance, an increase in the amount of SHS VP increases the competition index by 0.006 and 0.005 percentage points in SHS and grade 12, respectively. A 1 percent increase in the proportion of SHS

beneficiaries to the total SHS enrollment also increases the competition index by 0.005 and 0.03 percentage points, respectively.

On HHI 3. The number of ESC beneficiaries significantly affect the competition level for grade 10 at 0.10 level. A percent increase in the said variable increases the competition index by 0.04 points. Also, notably, the proportion of schools with ESC beneficiaries relative to the total JHS schools also increase the competition. For every 1 percent increase in this proportion, the competition level in JHS and grade 10 increases by 0.024 and 0.029 points, respectively.

For SHS, amount of SHS VP grant, and the proportion of SHS VP beneficiaries increase the competition level for grade 12. For every 1 percent increase in these variables, there is a 0.20 and 0.15 points increase in the competition level, respectively.

Chapter 5. Conclusions and Policy Implications

This chapter provides conclusions and policy implications, as well as recommendations for further research.

5.1 Conclusions

Market-type mechanisms (MTMs), like vouchers, are used to improve public service under the NPM paradigm (Dan & Andrews, 2014). Levin and Patrinos (2012) notes that the government may finance services through public funds but such services may be provided privately through market competition, among others. Such is the case of basic education vouchers, particularly the Education Service Contracting Program and the Senior High School Voucher Program in the Philippines.

The engagement of the private sector is also deemed to improve quality of education; as they compete for students, they try to improve the quality while minimizing cost (Lewis & Patrinos, 2012). Further, voucher programs also attract providers to cater for the poor and vulnerable learners; thereby, increasing the accessibility of education for all.

This research aimed to determine the effects of the basic education voucher programs in the Philippines on education outcomes, such as net enrolment rate and cohort survival rate, and on market competition among schools. The results show that the ESC program and the SHS VP have significant effects on both education outcomes and the competition.

However, it is important to note that due to the data limitations, the results may only be limited to be interpreted in the years covered by the study.

The number of ESC beneficiaries and the amount of ESC grant is deemed to increase the net enrolment rates in junior high school. Further, the amount of SHS VP grant also leads to an increase in the NER for SHS. The number of ESC beneficiaries also increase the cohort survival rates.

Further, the education vouchers also affect the market competition, particularly in the private schools. Notably, the number of ESC beneficiaries increase the competition index for grade 7 and 10. The proportion of schools with ESC beneficiaries relative to the total JHS schools and the proportion of ESC beneficiaries relative to the total enrolled also increases the competition index among JHS schools. Further, the proportion of SHS VP beneficiaries, SHS VP grant amount, and number of SHS VP beneficiaries are all deemed to increase the competition index as well.

The increase in competition index means that the market for secondary education will move closer towards the critical point and monopoly. In this regard, the country should also determine the level of competition (and monopoly) that it would want the private schools to have.

5.2 Policy Implications and Other Recommendations

Given the results and limitations of the study, the following policy implications and recommendations are suggested to be considered:

1. **On determining the level of competition in the secondary education market.** The study results show that the voucher programs increase the competition index towards monopoly, where private schools have a bigger share of the enrollment. In this regard, it may be helpful for the government to determine the level of competition in the secondary education that it wants to uphold. In this case, the schools (suppliers) must be efficient in

delivering quality education. In particular, it needs to identify whether the government wants to finance education and let the private sector, and state and local universities and colleges to provide the said service. Decongesting the public schools and providing vouchers to beneficiaries may be a viable option in terms of enrollment rate, however, it is equally important to determine whether it is also allocatively efficient. Grosskopf, et al (2001) notes that allocatively efficient school districts are those that chooses its combination inputs so that all inputs have the same marginal product per dollar. Grosskopf, et al (1997) found that it those with HHI of more than 0.27 are allocatively inefficient.

Competition in the education system may encourage school management to behave in a manner that is more responsive towards the parents' or students which includes optimization of student's achievement, among others (Borland and Howsen, 1992). Schools may also hire more equipped teachers to enhance the student's achievement, which is usually measured by test scores.

Similarly, other inputs to education must also be taken into consideration in deciding for a more monopolistic approach. Interventions to strengthen inclusion programs, enhancing teacher competencies, pursuit of the full implementation of the K to 12 implementation program, as well as curricular reforms must also be undertaken in line with this endeavor.

2. **On the efficiency of market competition in secondary education.** Further, it is also suggested to look into the efficiency of competition in secondary education and in other education levels. Given that the government is spending its funds for voucher programs, it is imperative to

explore whether its goals are also achieved. A study assessing the market competition in the Philippines affect the education outcomes, especially on standard scores, is suggested to be undertaken. It may be noted that there are also a number of schools that are fully reliant on voucher programs.

It is important to look into this because the voucher program might actually just become a business without the delivery of results like quality education. Hoxby (2000) found out that higher public school competition, which is measured by concentration of local districts in an education market, may lead to lower costs and improved educational outcomes. In particular, improvement in performance, resulting from competition, can increase the achievement in public schools (Hoxby, 2000).

Achievement rates in the country are also fairly low at only 49.48 percent in 2010. The World Bank (2011) notes that the available test scores show that private schools may be more viable in improving learning outcomes significantly. The same study found that there is significant benefit to favor the private schools, given the huge raw differential between public and private schools. This is even after the background, observable differences, and more rigorous methods of controlling for the attendance to private based on selection. Further, said study showed that students from less affluent families who attend private schools benefit academically as well.

3. **On school choice and vouchers.** Voucher programs increase the choices of its recipients. To note, there are families who have more resources but still opt to avail of the voucher programs. With this they might be robbing off some opportunities or access to the last mile learners, who need more education inputs and resources. It is also suggested to explore whether the

voucher programs substantially cover the poor beneficiaries/households, and other vulnerable groups.

4. **On the review of the extent of voucher support.** This study does not look into whether the voucher is enough to cover the expenses on tuition and other fees in private schools. To note, issues regarding top-up fees have been recurring in the Philippines, particularly with the SHS VP. Hence, it is suggested to conduct an assessment on such. The Asian Development Bank is currently looking into such assessment, particularly in the SHS VP, whose budget was loaned from them.
5. **On the review of the amount of subsidy.** Further, the amount of subsidy depends on the location of the beneficiary. For instance, those in highly-urbanized cities (HUCs) receive higher amounts of vouchers. If a beneficiary studies in an HUC near his residence that is not in the area of the SUC, he may have to pay more top-up fees because the voucher amounts are different. One might be living in a suburb but experiences the expensive costs of living near an HUC. Thus, it is suggested to conduct a review on the rates of the vouchers across regions, and also to look into the feasibility of inflation-based vouchers.
6. **On the conduct of impact evaluation on the ESC program.** Since the said program has been implemented for a number of years now, it is suggested that an impact evaluation be conducted to determine the impact of the said voucher program. Such may help in the review of other programs as well.

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Appendix

Herfindahl-Hirschman Indeces (HHIs)

Annex A. HHI 1: Total Private JHS (SHS) Enrollment Share relative to the Total Enrollment in JHS (SHS)

A.1 HHI 1 for JHS

Region	**Year**						
	2013	2014	2015	2016	2017	2018	2019
I	0.03	0.0323	0.0307	0.0293	0.0281	0.0268	0.0254
II	0.0356	0.0348	0.0333	0.0310	0.0296	0.0273	0.0264
III	0.0505	0.0478	0.0421	0.0428	0.0426	0.0411	0.0395
IV-A	0.0678	0.0576	0.0537	0.0550	0.0548	0.0516	0.0503
V	0.0163	0.0158	0.0145	0.0135	0.0132	0.0129	0.0133
VI	0.0191	0.0181	0.0174	0.0173	0.0168	0.0158	0.0160
VII	0.0402	0.0343	0.0339	0.0311	0.0307	0.0304	0.0296
VIII	0.0110	0.0098	0.0086	0.0086	0.0086	0.0082	0.0076
IX	0.0146	0.0111	0.0120	0.0107	0.0099	0.0097	0.0097
X	0.0460	0.0457	0.0440	0.0401	0.0367	0.0336	0.0322
XI	0.0351	0.0287	0.0275	0.0268	0.0248	0.0232	0.0226
XII	0.0378	0.0340	0.0313	0.0286	0.0266	0.0250	0.0244
XIII	0.0173	0.0156	0.0153	0.0143	0.0142	0.0141	0.0144
NCR	0.0564	0.0542	0.0600	0.0489	0.0517	0.0530	0.0525
CAR	0.0755	0.073	0.0701	0.0675	0.0659	0.0625	0.0619
IV-B	0.0177	0.0155	0.0165	0.0155	0.0143	0.0130	0.0130
BARMM	0.0229	0.0237	0.0150	0.0259	0.0206	0.0251	0.0269

A.2. HHI 1 for SHS

Region	Year			
	2016	**2017**	**2018**	**2019**
I	0.0954	0.0878	0.0780	0.0739
II	0.1091	0.1009	0.0958	0.0811
III	0.2548	0.2724	0.2677	0.2493
IV-A	0.3880	0.3896	0.3672	0.3486
V	0.0617	0.0632	0.0584	0.0555
VI	0.0833	0.0879	0.0846	0.0774
VII	0.1977	0.1869	0.1786	0.1632
VIII	0.0365	0.0389	0.0362	0.0321
IX	0.1551	0.1458	0.1125	0.0968
X	0.1428	0.1548	0.1504	0.1388
XI	0.2676	0.2510	0.2203	0.2051
XII	0.1225	0.1312	0.1239	0.1151
XIII	0.1206	0.1047	0.0829	0.0714
NCR	0.5744	0.7216	0.5373	0.5193
CAR	0.2755	0.2881	0.2549	0.2358
IV-B	0.0573	0.0629	0.0611	0.0478
BARMM	0.0904	0.0753	0.1060	0.1004

Annex B. HHI 2: Grade Level Private Enrollment Share in JHS, SHS relative to the Total Enrollment in JHS, SHS

B.1. HHI 2 for JHS

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.00210	0.00202	0.00192	0.00183	0.00176	0.00168	0.00159
II	0.00223	0.00218	0.00208	0.00194	0.00186	0.00172	0.00165
III	0.00316	0.00299	0.00263	0.00268	0.00267	0.00258	0.00247
IV-A	0.00424	0.00360	0.00335	0.00344	0.00343	0.00324	0.00315
V	0.00102	0.00099	0.00091	0.00085	0.00083	0.00081	0.00083
VI	0.00119	0.00113	0.00109	0.00108	0.00105	0.00100	0.00101
VII	0.00252	0.00214	0.00212	0.00195	0.00193	0.00192	0.00186
VIII	0.00676	0.00061	0.00054	0.00054	0.00054	0.00052	0.00048
IX	0.00092	0.00069	0.00075	0.00067	0.00062	0.00061	0.00061
X	0.00288	0.00286	0.00275	0.00252	0.00232	0.00213	0.00203
XI	0.00220	0.00180	0.00172	0.00168	0.00155	0.00146	0.00142
XII	0.00237	0.00214	0.00196	0.00180	0.00167	0.00158	0.00154
XIII	0.00109	0.00098	0.00096	0.00090	0.00090	0.00089	0.00091
NCR	0.00353	0.00341	0.00378	0.00306	0.00323	0.00332	0.00329
CAR	0.00437	0.00457	0.00440	0.00425	0.00414	0.00394	0.00389
IV-B	0.00111	0.00097	0.00103	0.00097	0.00090	0.00082	0.00082
BARMM	0.00160	0.00149	0.00094	0.00163	0.00130	0.00162	0.00172

B.2. HHI 2 for Grade 7

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.0023	0.0021	0.0021	0.0021	0.0020	0.0018	0.0016
II	0.0026	0.0025	0.0023	0.0022	0.0021	0.0021	0.0018
III	0.0034	0.0032	0.0029	0.0030	0.0029	0.0030	0.0027
IV-A	0.0045	0.0038	0.0034	0.0037	0.0039	0.0038	0.0034
V	0.0012	0.0012	0.0011	0.0010	0.0010	0.0010	0.0009
VI	0.0013	0.0012	0.0012	0.0012	0.0013	0.0013	0.0011
VII	0.0028	0.0022	0.0022	0.0023	0.0023	0.0025	0.0019
VIII	0.0068	0.0007	0.0007	0.0006	0.0007	0.0006	0.0005
IX	0.0011	0.0008	0.0009	0.0008	0.0008	0.0008	0.0006
X	0.0033	0.0031	0.0031	0.0030	0.0031	0.0028	0.0023
XI	0.0021	0.0018	0.0018	0.0019	0.0018	0.0018	0.0015
XII	0.0029	0.0026	0.0022	0.0021	0.0021	0.0020	0.0018
XIII	0.0013	0.0011	0.0012	0.0012	0.0012	0.0011	0.0010
NCR	0.0033	0.0030	0.0033	0.0033	0.0034	0.0037	0.0035
CAR	0.0059	0.0051	0.0052	0.0053	0.0050	0.0051	0.0046
IV-B	0.0013	0.0010	0.0011	0.0011	0.0011	0.0010	0.0008
BARMM	0.0018	0.0018	0.0011	0.0021	0.0017	0.0025	0.0023

B.3. HHI2 for Grade 8

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.0022	0.0021	0.0019	0.0019	0.0019	0.0017	0.0017
II	0.0024	0.0023	0.0022	0.0019	0.0020	0.0017	0.0018
III	0.0033	0.0031	0.0026	0.0028	0.0027	0.0026	0.0027
IV-A	0.0044	0.0038	0.0034	0.0034	0.0035	0.0034	0.0035
V	0.0011	0.0011	0.0010	0.0009	0.0008	0.0009	0.0010
VI	0.0012	0.0012	0.0011	0.0011	0.0011	0.0011	0.0012
VII	0.0026	0.0023	0.0021	0.0020	0.0020	0.0020	0.0022
VIII	0.0082	0.0006	0.0005	0.0006	0.0006	0.0006	0.0005
IX	0.0009	0.0008	0.0008	0.0007	0.0006	0.0007	0.0007
X	0.0031	0.0031	0.0028	0.0027	0.0024	0.0024	0.0023
XI	0.0022	0.0019	0.0018	0.0017	0.0016	0.0015	0.0017
XII	0.0024	0.0023	0.0021	0.0019	0.0017	0.0017	0.0017
XIII	0.0012	0.0010	0.0010	0.0009	0.0010	0.0010	0.0010
NCR	0.0034	0.0031	0.0034	0.0030	0.0033	0.0033	0.0035
CAR	0.0050	0.0049	0.0045	0.0043	0.0045	0.0043	0.0042
IV-B	0.0012	0.0011	0.0010	0.0010	0.0009	0.0009	0.0009
BARMM	0.0016	0.0016	0.0009	0.0016	0.0014	0.0016	0.0020

B.4. HHI 2 for Grade 9

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.0020	0.0020	0.0019	0.0017	0.0017	0.0016	0.0016
II	0.0020	0.0021	0.0020	0.0019	0.0017	0.0016	0.0016
III	0.0029	0.0029	0.0026	0.0025	0.0026	0.0024	0.0024
IV-A	0.0040	0.0035	0.0034	0.0034	0.0032	0.0030	0.0031
V	0.0009	0.0009	0.0008	0.0008	0.0008	0.0007	0.0008
VI	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010
VII	0.0024	0.0021	0.0024	0.0018	0.0018	0.0017	0.0018
VIII	0.0066	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005
IX	0.0008	0.0006	0.0007	0.0006	0.0005	0.0005	0.0006
X	0.0027	0.0028	0.0026	0.0023	0.0021	0.0018	0.0020
XI	0.0020	0.0017	0.0017	0.0016	0.0014	0.0014	0.0013
XII	0.0021	0.0019	0.0019	0.0017	0.0016	0.0013	0.0015
XIII	0.0010	0.0009	0.0009	0.0008	0.0008	0.0008	0.0009
NCR	0.0033	0.0032	0.0035	0.0029	0.0031	0.0031	0.0031
CAR	0.0027	0.0042	0.0042	0.0037	0.0037	0.0035	0.0037
IV-B	0.0010	0.0009	0.0010	0.0009	0.0008	0.0007	0.0008
BARMM	0.0017	0.0015	0.0009	0.0015	0.0011	0.0013	0.0014

B.5. HHI 2 Grade 10

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.0020	0.0019	0.0018	0.0017	0.0016	0.0015	0.0015
II	0.0020	0.0019	0.0018	0.0017	0.0016	0.0014	0.0015
III	0.0030	0.0027	0.0025	0.0024	0.0024	0.0023	0.0022
IV-A	0.0041	0.0034	0.0033	0.0033	0.0031	0.0027	0.0027
V	0.0009	0.0008	0.0007	0.0007	0.0007	0.0006	0.0006
VI	0.0011	0.0011	0.0009	0.0010	0.0009	0.0008	0.0008
VII	0.0022	0.0020	0.0019	0.0017	0.0016	0.0015	0.0015
VIII	0.0055	0.0006	0.0004	0.0004	0.0004	0.0004	0.0004
IX	0.0008	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
X	0.0024	0.0024	0.0025	0.0021	0.0017	0.0016	0.0014
XI	0.0025	0.0017	0.0016	0.0015	0.0013	0.0012	0.0012
XII	0.0021	0.0018	0.0016	0.0015	0.0014	0.0013	0.0012
XIII	0.0009	0.0008	0.0008	0.0007	0.0006	0.0006	0.0007
NCR	0.0041	0.0043	0.0050	0.0030	0.0030	0.0031	0.0030
CAR	0.0039	0.0041	0.0038	0.0036	0.0034	0.0030	0.0031
IV-B	0.0010	0.0008	0.0009	0.0009	0.0008	0.0007	0.0007
BARMM	0.0013	0.0011	0.0008	0.0014	0.0010	0.0010	0.0012

B.6 HHI 2 for SHS

Region	Year		
	2017	2018	2019
I	0.02198	0.01957	0.01850
II	0.02538	0.02396	0.02028
III	0.06883	0.06716	0.06246
IV-A	0.09793	0.09228	0.08736
V	0.01596	0.01463	0.01394
VI	0.02213	0.02122	0.01939
VII	0.04725	0.04493	0.04088
VIII	0.00976	0.00909	0.00803
IX	0.03678	0.02817	0.02427
X	0.03906	0.03786	0.03477
XI	0.06362	0.05521	0.05157
XII	0.03320	0.03111	0.02896
XIII	0.02627	0.02077	0.01790
NCR	0.18302	0.13555	0.13029
CAR	0.07255	0.06392	0.05897
IV-B	0.01606	0.01526	0.01196
BARMM	0.01904	0.02710	0.02524

B.7. HHI 2 for Grade 11

Region	Year			
	2016	2017	2018	2019
I	0.09536	0.02343	0.02188	0.01970
II	0.10906	0.02928	0.02526	0.02147
III	0.25482	0.08290	0.07507	0.06842
IV-A	0.38798	0.11245	0.10570	0.09592
V	0.06172	0.01906	0.01605	0.01586
VI	0.08328	0.02591	0.02356	0.02142
VII	0.19771	0.05707	0.05179	0.04442
VIII	0.03654	0.01095	0.01027	0.00846
IX	0.15510	0.04372	0.03036	0.02678
X	0.14285	0.04642	0.04425	0.03749
XI	0.26763	0.07833	0.06049	0.05920
XII	0.12252	0.04059	0.03516	0.03369
XIII	0.12063	0.02934	0.02292	0.01981
NCR	0.57441	0.22640	0.16115	0.14561
CAR	0.27555	0.08495	0.07104	0.06174
IV-B	0.05726	0.02059	0.01562	0.01256
BARMM	0.09043	0.02294	0.03501	0.02897

B.8. HHI 2 for Grade 12

Region	Year		
	2017	2018	2019
I	0.02052	0.01726	0.01729
II	0.02147	0.02266	0.01910
III	0.05475	0.05925	0.05651
IV-A	0.08341	0.07887	0.07881
V	0.01286	0.01321	0.01202
VI	0.01835	0.01888	0.01737
VII	0.03743	0.03806	0.03734
VIII	0.00858	0.00791	0.00761
IX	0.02984	0.02599	0.02176
X	0.03170	0.03147	0.03204
XI	0.04891	0.04994	0.04394
XII	0.02582	0.02707	0.02423
XIII	0.02319	0.01863	0.01599
NCR	0.13963	0.10995	0.11497
CAR	0.06015	0.05679	0.05620
IV-B	0.01153	0.01491	0.01135
BARMM	0.01513	0.01918	0.02151

Annex C. Grade Level Private Enrollment in JHS, SHS Relative to the Total Grade Level Enrollment in JHS, SHS

C.1. HHI 3 for JHS

Region	Year						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
I	0.0338	0.0325	0.0309	0.0294	0.0283	0.0270	0.0256
II	0.0358	0.0350	0.0337	0.0313	0.0299	0.0277	0.0267
III	0.0514	0.0484	0.0426	0.0431	0.0429	0.0415	0.0398
IV-A	0.0688	0.0582	0.0544	0.0556	0.0552	0.0522	0.0507
V	0.0166	0.0160	0.0146	0.0137	0.0134	0.0130	0.0133
VI	0.0194	0.0182	0.0176	0.0175	0.0169	0.0161	0.0162
VII	0.0412	0.0350	0.0348	0.0316	0.0310	0.0310	0.0299
VIII	0.0735	0.0101	0.0087	0.0088	0.0087	0.0084	0.0077
IX	0.0150	0.0114	0.0124	0.0111	0.0102	0.0103	0.0101
X	0.0467	0.0466	0.0451	0.0409	0.0372	0.0345	0.0326
XI	0.0371	0.0298	0.0286	0.0280	0.0258	0.0243	0.0231
XII	0.0385	0.0344	0.0319	0.0292	0.0273	0.0258	0.0248
XIII	0.0176	0.0160	0.0156	0.0143	0.0143	0.0141	0.0145
NCR	0.0578	0.0554	0.0613	0.0493	0.0520	0.0535	0.0528
CAR	0.0705	0.0736	0.0706	0.0678	0.0662	0.0626	0.0620
IV-B	0.0180	0.0157	0.0169	0.0158	0.0145	0.0132	0.0132
BARMM	0.0255	0.0238	0.0152	0.0262	0.0207	0.0252	0.0271

C.2. HHI 3 for Grade 7

Region	Year						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
I	0.0296	0.0294	0.0282	0.0273	0.0262	0.0243	0.0229
II	0.0334	0.0320	0.0290	0.0287	0.0267	0.0245	0.0242
III	0.0428	0.0420	0.0380	0.0386	0.0392	0.0378	0.0366
IV-A	0.0580	0.0502	0.0457	0.0492	0.0500	0.0460	0.0471
V	0.0143	0.0143	0.0133	0.0118	0.0121	0.0117	0.0137
VI	0.0169	0.0162	0.0155	0.0154	0.0153	0.0137	0.0157
VII	0.0334	0.0281	0.0273	0.0271	0.0280	0.0267	0.0271
VIII	0.0555	0.0080	0.0076	0.0072	0.0079	0.0071	0.0065
IX	0.0128	0.0087	0.0096	0.0085	0.0083	0.0073	0.0081
X	0.0392	0.0373	0.0369	0.0338	0.0329	0.0289	0.0300
XI	0.0249	0.0214	0.0212	0.0209	0.0193	0.0189	0.0195
XII	0.0333	0.0302	0.0267	0.0243	0.0223	0.0214	0.0227
XIII	0.0151	0.0133	0.0143	0.0142	0.0140	0.0135	0.0147
NCR	0.0444	0.0433	0.0486	0.0444	0.0464	0.0484	0.0483
CAR	0.0738	0.0667	0.0662	0.0656	0.0620	0.0604	0.0630
IV-B	0.0159	0.0126	0.0139	0.0133	0.0128	0.0116	0.0121
BARMM	0.0216	0.0220	0.0135	0.0238	0.0194	0.0257	0.0254

C.3. HHI 3 for Grade 8

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.0326	0.0306	0.0297	0.0285	0.0274	0.0258	0.0245
II	0.0355	0.0336	0.0324	0.0289	0.0296	0.0258	0.0249
III	0.0484	0.0448	0.0393	0.0418	0.0406	0.0389	0.0379
IV-A	0.0649	0.0553	0.0506	0.0516	0.0537	0.0501	0.0478
V	0.0154	0.0155	0.0139	0.0133	0.0123	0.0124	0.0123
VI	0.0175	0.0175	0.0167	0.0166	0.0162	0.0157	0.0145
VII	0.0379	0.0327	0.0306	0.0294	0.0290	0.0298	0.0283
VIII	0.0762	0.0092	0.0079	0.0086	0.0080	0.0081	0.0073
IX	0.0135	0.0112	0.0111	0.0101	0.0093	0.0092	0.0086
X	0.0459	0.0448	0.0407	0.0405	0.0351	0.0326	0.0302
XI	0.0322	0.0269	0.0253	0.0247	0.0233	0.0206	0.0213
XII	0.0356	0.0333	0.0301	0.0278	0.0251	0.0232	0.0226
XIII	0.0172	0.0145	0.0139	0.0137	0.0143	0.0138	0.0134
NCR	0.0504	0.0473	0.0519	0.0469	0.0508	0.0497	0.0519
CAR	0.0739	0.0711	0.0671	0.0658	0.0655	0.0633	0.0585
IV-B	0.0172	0.0158	0.0147	0.0147	0.0137	0.0128	0.0120
BARMM	0.0222	0.0227	0.0132	0.0239	0.0203	0.0233	0.0278

C.4. HHI 3 for Grade 9

Region	Year						
	2013	2014	2015	2016	2017	2018	2019
I	0.0348	0.0340	0.0310	0.0301	0.0286	0.0280	0.0260
II	0.0354	0.0367	0.0346	0.0327	0.0295	0.0301	0.0266
III	0.0516	0.0508	0.0423	0.0436	0.0440	0.0425	0.0401
IV-A	0.0699	0.0608	0.0560	0.0568	0.0554	0.0543	0.0512
V	0.0162	0.0162	0.0149	0.0140	0.0139	0.0133	0.0132
VI	0.0197	0.0185	0.0180	0.0177	0.0174	0.0167	0.0166
VII	0.0431	0.0372	0.0398	0.0324	0.0318	0.0319	0.0312
VIII	0.0794	0.0107	0.0089	0.0090	0.0091	0.0083	0.0083
IX	0.0150	0.0122	0.0136	0.0114	0.0106	0.0112	0.0106
X	0.0475	0.0519	0.0466	0.0414	0.0398	0.0360	0.0342
XI	0.0365	0.0328	0.0300	0.0299	0.0279	0.0264	0.0232
XII	0.0386	0.0359	0.0332	0.0301	0.0293	0.0264	0.0252
XIII	0.0175	0.0172	0.0153	0.0141	0.0141	0.0145	0.0145
NCR	0.0584	0.0541	0.0571	0.0495	0.0531	0.0550	0.0520
CAR	0.0537	0.0743	0.0716	0.0661	0.0667	0.0620	0.0625
IV-B	0.0176	0.0169	0.0183	0.0154	0.0150	0.0135	0.0136
BARMM	0.0293	0.0263	0.0154	0.0272	0.0205	0.0255	0.0262

C.5 HHI 3 for Grade 10

Region	Year						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
I	0.0384	0.0358	0.0346	0.0318	0.0309	0.0299	0.0290
II	0.0387	0.0377	0.0387	0.0349	0.0335	0.0304	0.0309
III	0.0629	0.0559	0.0509	0.0486	0.0478	0.0469	0.0445
IV-A	0.0823	0.0666	0.0653	0.0647	0.0620	0.0585	0.0570
V	0.0207	0.0177	0.0164	0.0158	0.0153	0.0147	0.0141
VI	0.0235	0.0206	0.0201	0.0203	0.0187	0.0183	0.0181
VII	0.0504	0.0419	0.0414	0.0376	0.0353	0.0354	0.0329
VIII	0.0828	0.0125	0.0106	0.0105	0.0098	0.0100	0.0086
IX	0.0187	0.0135	0.0152	0.0145	0.0128	0.0134	0.0129
X	0.0542	0.0523	0.0561	0.0481	0.0411	0.0403	0.0360
XI	0.0548	0.0382	0.0380	0.0364	0.0327	0.0313	0.0284
XII	0.0466	0.0381	0.0376	0.0348	0.0325	0.0320	0.0286
XIII	0.0207	0.0188	0.0188	0.0154	0.0145	0.0147	0.0152
NCR	0.0780	0.0770	0.0876	0.0562	0.0577	0.0610	0.0591
CAR	0.0806	0.0821	0.0774	0.0738	0.0706	0.0648	0.0639
IV-B	0.0212	0.0177	0.0205	0.0197	0.0165	0.0150	0.0149
BARMM	0.0288	0.0243	0.0188	0.0302	0.0228	0.0263	0.0290

C.6. HHI 3 for SHS

Region	Year			
	2016	**2017**	**2018**	**2019**
I	0.0477	0.0883	0.0780	0.0741
II	0.0545	0.1008	0.0964	0.0814
III	0.1274	0.2716	0.2680	0.2498
IV-A	0.1940	0.3895	0.3674	0.3490
V	0.0309	0.0631	0.0588	0.0554
VI	0.0416	0.0877	0.0848	0.0777
VII	0.0989	0.1863	0.1787	0.1638
VIII	0.0183	0.0389	0.0363	0.0323
IX	0.0776	0.1464	0.1149	0.0973
X	0.0714	0.1544	0.1505	0.1394
XI	0.1338	0.2507	0.2229	0.2050
XII	0.0613	0.1306	0.1253	0.1149
XIII	0.0603	0.1051	0.0836	0.0715
NCR	0.2872	**0.5613**	**0.5361**	**0.5195**
CAR	0.1378	0.2883	0.2556	0.2366
IV-B	0.0286	0.0625	0.0620	0.0482
BARMM	0.0452	0.0752	0.1056	0.1022

C.7. HHI 3 for Grade 11

Region	Year			
	2016	**2017**	**2018**	**2019**
I	0.0954	0.0827	0.0789	0.0712
II	0.1091	0.1028	0.0889	0.0771
III	0.2548	0.2818	0.2641	0.2425
IV-A	0.3880	0.3899	0.3648	0.3433
V	0.0617	0.0650	0.0547	0.0568
VI	0.0833	0.0900	0.0822	0.0739
VII	0.1977	0.1944	0.1782	0.1567
VIII	0.0365	0.0395	0.0350	0.0298
IX	0.1551	0.1417	0.0987	0.0924
X	0.1428	0.1655	0.1485	0.1319
XI	0.2676	0.2535	0.2016	0.2075
XII	0.1225	0.1380	0.1147	0.1179
XIII	0.1206	0.1006	0.0771	0.0699
NCR	**0.5744**	**0.5656**	**0.5533**	**0.5173**
CAR	0.2755	0.2857	0.2465	0.2239
IV-B	0.0573	0.0689	0.0535	0.0438
BARMM	0.0904	0.0834	0.1091	0.0907

C.8. HHI 3 for Grade 12

Region	Year		
	2017	**2018**	**2019**
I	0.0938	0.0770	0.0770
II	0.0988	0.1039	0.0856
III	0.2614	0.2718	0.2571
IV-A	0.3892	0.3700	0.3546
V	0.0611	0.0629	0.0540
VI	0.0854	0.0875	0.0815
VII	0.1783	0.1792	0.1709
VIII	0.0382	0.0376	0.0349
IX	0.1510	0.1310	0.1021
X	0.1432	0.1526	0.1469
XI	0.2479	0.2442	0.2025
XII	0.1233	0.1358	0.1119
XIII	0.1096	0.0900	0.0731
NCR	**0.5571**	**0.5188**	**0.5217**
CAR	0.2909	0.2648	0.2492
IV-B	0.0561	0.0706	0.0526
BARMM	0.0669	0.1021	0.1137

국문초록

기초 교육 바우처 프로그램이 주요 교육성과와 학교경쟁에 미치는 영향

필리핀의 사례를 중심으로

Christine Joy O. Mamuyac
서울대학교 행정대학원
글로벌행정전공

신공공관리는(NPM)는 정부가 노를 젓기보다는 방향을 잡는 역할을 담당하여야 함을 강조하였다. 이러한 패러다임 하에서 정부는 공공서비스를 이전하기 위해 민간부문 및 비정부기구(NGO)와 같은 다른 행위자들의 개입과 참여를 장려해야 한다. 또한, 규칙 기반 및 권한 중심의 프로세스를 대체하고 조직의 서비스 품질 및 전반적인 효율성을 향상시키기 위해 시장형 메커니즘(market-type mechanism, MTM)을 활용한다. 바우처는 이러한 MTM 의 한 종류로서 정부의 공적 지출을 유지하면서 특정 서비스의 이용자들에게 소비자 선택권을 부여하기 위한 방식이다.

바우처는 또한 형평성을 중시하는데, 이를 통하여 교육 기회에 대한 접근성을 향상시킨다. 특히 필리핀 정부는 양질의 기초교육에 대한 접근성을 높이기 위해 교육서비스 계약 (the Education Service Contracting, ESC) 프로그램과 시니어 고교 바우처 프로그램(the Senior High School Voucher Program, SHS VP) 등의 바우처 프로그램을 시행하고 있다. 이 프로그램들은 중학교 학생들이 정부에 의해 계약된 사립학교에 다닐 수 있도록 지원한다. ESC 프로그램은 6 학년 학생들이 사립학교에서 7−10 학년까지 4 년간 중학교(junior high school, JHS) 교육을 받을 수 있도록 한다. 결과적으로, SHS 바우처 프로그램은 고등학교 과정을 제공하는 비예비학교에 등록하려는 JHS/10 학년 학생들에게 바우처/보조금을 제공한다.

이와 관련하여 본 연구는 (a): 순등록률 및 코호트 생존율(올해 한 학년에 등록한 학생 수와 전년도 한 학년에 등록한 학생 수의 비율) 같은 교육 성과와 (b) 필리핀 중등교육 시장 에서의 경쟁에 대한 바우처 프로그램의 효과를 조사하는 것을 목적으로 한다. 이번 연구는 2013 년부터 2020 년까지 학년(school years, SYs)을 대상으로 필리핀 교육부(DepED)로부터 확보한 2 차 데이터를 활용해 대부분의 변수를 대상으로 패널 데이터 분석을 실시하고 지역별로 세분화했다. 경쟁은 지역간 순등록 비중의 Herfindahl−Hirschman 지수(HHI)로 대표되는데, 여기서 지수가 0 이면 시장은 완전경쟁, 1 이면 독과점이다.

임의 효과 모델을 활용한 분석 결과는, 바우처 프로그램이 중 · 고교 순 등록률에 상당한 영향을 미친다는 것을 보여준다. 또한 고정효과 모델을 활용한 결과 ESC 프로그램은 중학교의 코호트 생존율, 특히 ESC 수혜자의 수와 전체 재적 JHS 학생 대비 ESC 수혜자의 비율에 유의미한 영향을 미치는 것으로 나타났다.

바우처 프로그램은 학교 간 경쟁에도 큰 영향을 미치는 것으로 나타났다. 고정효과 모델을 활용한 결과 다음 변수들이 매우 유의미하였다: (a) JHS 총 재적학생 대비 ESC 수혜자 비율, (2) 수혜자 수, (3) 총 JHS 학교 대비 ESC 수혜자가 있는 학교의 비율. 또한 SHS 에의 총 등록에 대한 SHS 수혜자 비율과 총 등록에 대한 SHS VP 수혜자의 비율이 고등학교에서의 경쟁에 영향을 미친다. 그러나 이러한 연구 결과는 데이터의 한계로 인해 연구에서 다룬 기간 동안에만 적용될 수 있다는 점을 주의할 필요가 있다.

이를 통해 필리핀 정부가 중등교육 시장의 경쟁 수준을 결정하고, 특히 교육 성과의 증진을 달성하는 데 있어 그러한 경쟁이 해당 시장에 효율적인지 여부를 확인하는 것이 필수적이다.

주제어: 필리핀, 바우처, 교육, 경쟁, 교육 성과

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