The Impact of Adopting a Community College Baccalaureate Policy on States' Graduation Rate and Enrollment: A Consideration for All and Latino Students

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Higher Education)
in the University of Michigan
2019

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DEDICATION

To my family for encouraging big dreams and for providing me with the determination to achieve them; and to all McNair Scholars who inspired me to initiate and, most importantly, finalize my work to complete a doctoral degree.

ACKNOWLEDGMENTS

I thank my dissertation committee for guiding me through this process. I am grateful to my chair, Edward St. John, who was very patient with me and who showed me the way to develop this research project into a successful dissertation. His works and feedback taught me how to contextualize a policy and explore it to improve it. I am also immensely grateful to my co-chair, John Burkhardt. From the beginning of the program John took me under his wing and was generous with his time. He provided me with professional opportunities and gave me the drive to be a higher education professional and a scholar whose work is capable of transforming higher education institutions to be more inclusive places. I'm very thankful for Brian McCall, who accompanied me in this PhD endeavor from my first statistics class, through my comprehensive exam, and to the end of the dissertation. During all these points, he provided great insight into my projects and served as a wonderful resource for my methodological questions. More importantly he was kind and patient, and had faith in my methodological skills. Julie Posselt, thank you for staying with me until the end of this process, being generous with your time, and providing extremely helpful feedback. I thank Vasti Torres who graciously accepted being part of the committee without knowing me before and whose comments made this study stronger. I feel very fortunate to have you all on my committee.

Doing this dissertation would not have been possible with the hugely important guidance and mentoring of Mark Wiederspan and Allison Flaster. They both guided me step by step through sophisticated quantitative data analysis and encouraged me to keep going whenever I hit

roadblocks. In addition, this dissertation would not be possible without the support of Ozan Jaquette, who provided access to his database.

Other faculty members also helped during this doctoral program. Steve DesJardins was the chair of the department when I entered the program, and he quickly became a mentor who supported my student experience in a gentle and encouraging way. I also want to thank Michael Bastedo for instilling in me a great appreciation of organizational behavior theory and for pushing me to perform my best with his high expectations and straightforward guidance.

I would have not survived this program without the support of my colleagues at the National Forum on Higher Education for the Public Good: Noe Ortega (my partner in crime), Lara Kovacheff Badke, Kim Reyes, Cassie Barnhart, Marisol Ramos, Joanna Hernandez, Omar Husain, Christopher Nellum, Joanna Frye, Aurora Kamimura, Fr.Daniel Parrish, and Amy Puffenberger. You all provided me with a home inside the program and challenged me to become the best academic and professional I could be. I also want to thank CSHPE peers Michelle Randolph, Jeonjeun Kim, Chay-yu Chen, Sergio Celis, James Ellis, and Alfredo Sosa for sharing laughs and tears during this process.

I want to thank my family in Chicago, Dennis Sagel for accompanying and supporting me for most of this endeavor. I want to thank Paloma for her love, strength, and patience and Ximena for bringing so much joy into my life. Thanks to my Mazaltan Family, Jorge Vidal, Angela Rodriguez, Camilo Vidal, Fidel Vidal, Daniela Cardenas, and Drucy Crespo, who kept me motivated and supported at each step of the process. My Chicago extended family made sure I had enough support to finish this program; thanks to Kim Sanborn, Alejandra Prieto, Jenny Humble, Carlos Ospina, Elizabeth Rodriguez, Sonia Morales, Peggy Valdez, Luis Allende, Ryan Brochert, Meztli Santamaria, Jay McDermnont, June Kasiga and Kathy Sagel.

Finally, I want to thank the Northeastern Illinois University McNair Scholars Program for providing me with an environment that valued my efforts and facilitated this journey.

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ABSTRACT

This study evaluates the Community College Baccalaureate (CCB) as a regulatory change and its impact on undergraduate six-year graduation rate and enrollment at public four-year institutions for all students and for Latinos specifically. This policy diverges from the standard historical structure of higher education in the United States, which traditionally differentiates the missions of community colleges from those of four-year institutions. Moreover, the adoption of CCBs is an interesting policy experiment in that they appear to offer a solution that reconciles two seemingly conflicting preoccupations of state governments. These concerns include increased educational offerings, reduction of funding for bachelor's degrees, and improvement in baccalaureate degree completion rates.

In this dissertation, I demonstrate how shifting to a CCB policy influences enrollment and graduation rates at pubic four-year institutions. This study found that adopting a CCB policy has a positive effect on undergraduate enrollment for all students in public four-year institutions. It also indicated that the policy has a positive though statistically significant effect on the enrollment of Latinos. This investigation also found that the policy did not have any effect on average six-year graduation rates of Latinos or all other students.

This study indicates that CCBs share the same conundrum that has daunted community colleges since their creation. CCBs expand educational access, but they may be playing a role in the growing stratification of higher education by excluding many Latino students from enrolling in four-year programs. Moreover, their impact on graduation rates reinforce the

suspicion harbored by scholars about the frailty of community colleges in a political environment that focuses on reducing the cost of higher education. CCBs might be searching for more revenue sources to compensate for the declining support of state governments for higher education. However, as they are able to expand their reach, they are accepting funding at levels below other state universities offering bachelor's degrees, in this way perpetuating the underfunding problem that they were hoping to alleviate. This study's results make it -probable that underfunding issues may be affecting the service CCBs provide to baccalaureate-seeking students and ultimately their possibility of graduating.

CHAPTER I

Introduction

College attainment when examined from the stand point of population dynamics, is a complex process involving numerous factors at the individual, institutional, and governmental levels (Combs, 2012; St. John, Daun-Barnet, & Moroski- Chapman, 2013; 2018). One important factor, which contributes to this process, is found in the structure of the higher education system in each state. Higher education state systems in the U.S. vary in terms of the missions and purposes of institutions, the distribution of students across different sectors, and the mechanisms used to govern and coordinate colleges and universities (Perna, Klein, & McLendon, 2014). The configuration of higher education systems affects the types of public policies that may be required to encourage higher education attainment. Likewise, changes that affect that configuration might also have an impact on student outcomes (Perna & Finney, 2014).

For example, states with a large percentage of higher education enrollment in two-year institutions and states with consolidated governing boards are more likely to adopt dual-enrollment policies than states with small two-year sectors or with looser coordinating boards (Mokher & McLendon, 2009). In states like Texas, which encourage dual enrollment, completing a college course through such programs has been found to have a consistent and positive association with college enrollment, persistence, and completion (Struhl & Vargas,

2012).

Allowing community colleges to confer baccalaureate degrees is one change in higher education that has grown in acceptance in recent decades. In 1995, four states permitted one or more community colleges to confer bachelor's degrees; by 2015, this number had increased to 22. This phenomenon has received attention from higher education researchers studying what drives this change and how it affects higher education institutions. Prior to this study, researchers have seldom assessed the effects on student outcomes. This is unfortunate as policies that affect the configuration of a state's public higher education system by modifying the missions and purposes of institutions, as well as the distribution of students across different sectors, might affect students' overall educational attainment in each state.

For many years, the community college sector has distinguished itself from the four-year sector by providing technical and community education in addition to academic programs, thus playing a limited role in the baccalaureate pipeline. Usually community colleges provide only associate's degrees, developmental education, and the first two years of college for students hoping to transfer to four-year institutions. Consequently, the trend toward community colleges conferring baccalaureate degrees represents a landmark shift in their services and a departure from their traditional role in higher education (McKinney & Morris, 2010; Martinez, 2018).

Community colleges that offer such programs are defined as Community College Baccalaureates, referred to as CCBs henceforth (D. Floyd & Arnauld, 2007). CCBs go through lengthy and expensive legislative processes and make significant organizational changes to earn the opportunity to provide bachelor's degrees (Burrows, 2002; Plecha, 2007; Thor & Bustamante, 2013, Martinez, 2018). To date, research on CCBs' effect on college attainment

consist of only six studies. These have examined CCBs' effects on attainment indicators such as enrollments at the institutions offering these programs (Manias, 2007), production of specific degrees in states adopting this policy (Daun-Barnett, 2011, Porter, Caminole and Jaquette (2014), Park, Tandberg, Shim, Hu and Herrington, 2016), and reduction of the cost of baccalaureate education in such states (Bemmel,2008; Bottorff, 2011).

The purpose of this research is twofold:

1) add to the body of literature concerning policy changes in states' higher education systems and their relationship to educational outcomes; and

2) inform policy makers whether the adoption of a community college baccalaureate policy contributes to the goal of increasing college graduation in their states.

For reasons that will be elaborated further, these two research goals will be approached generally and then with closer considerations to the impact of effects on Latino students.

Problem Statement

In the U.S., individual states have the primary responsibility for developing policies that promote educational attainment and close gaps in attainment across groups (Ewell, Boeke, & Zis, 2008; Perna & Finney, 2014; St. John et al., 2013;2018). One of the widely espoused goals of state educational policy is to increase the number of citizens going to and completing college because of the clear effects on the state's economic performance and the well-being of its populace (Baum, Ma & Payea, 2013; Ma, Pender, & Welch, 2016). A larger proportion of the population with postsecondary degrees has been linked to higher per capita income, lower poverty rates, and a healthier citizenry (Baum et al. 2013; Ma et al. 2016). It also promotes community engagement and more trust in governments, institutions, and other

people (OECD, 2014).

Nevertheless, educational attainment has stalled in the last two decades, causing criticism of public higher education performance in the U.S. Between 1994 and 2014, despite numerous policy interventions and general acknowledgment of is importance, the six-year graduation rate for public institutions increased from approximately 50 percent to 59 percent—less than 0.9 percent growth per year. Consequently, the education attainment of the U.S. population has fallen behind other nations, especially among people 18 to 24 years old. According to a 2014 report of the Organization for Economic Cooperation and Development (OECD), which tracks the education investment and performance of wealthier democracies, U.S. college graduation rates rank 19th out of 29 countries (OECD, 2014). Because the U.S. was once a leading country in educational attainment, low rates of college completion have become a growing concern for policy makers and higher education scholars (Perna & Finney, 2014; Rutherford & Rabovsky, 2014).

Equally concerning is the inequity in educational attainment of different populations in the U.S. High socioeconomic status (SES) students are more likely to earn a college degree than low SES students (An, 2013). For many racial and ethnic minority groups, college completion rates are lower than the national average. This is alarming, given that these groups are driving the demographic growth in the country (Rutherford & Rabovsky, 2014). Even more unsettling are education policy scholars' warnings that these gaps are likely to continue or even increase, given recent trends like the dismantling of affirmative action policies and the diminishment of state investment in higher education (An, 2013; Frye, 2015; St. John et al., 2013). Academics caution that, at a time when the knowledge-based globaleconomy requires more Americans with education and training beyond high school, continuing in a direction that

allows gaps in educational achievement among different student populations will undermine the nation's competitive edge and economic prosperity (Callan, Finney, Kirst, Usan & Venezia, 2006; Petrosian, 2017). Given the proven connection between higher levels of education and civic engagement, these trends are also concern for the future state of our society.

Closely related is concern about the decreased affordability of higher education. According to the College Board (2015), tuition and fees have been rising in real terms for decades. The cost of higher education has risen at rates far exceeding that of most other crucial goods and services, including health care. Higher education costs have grown faster than inflation and growth in personal income. As a result, despite its financial payoff, the relative cost of higher education has increased as people give up other expenses to pay for college (College Board, 2014). Even more significantly, the financial benefit of a college education is reflected less in income increases for college graduates than in decreasing wages of those who complete only high school (College Board 2014; OECD; 2014). The escalation in the cost of higher education threatens to push college completion beyond the reach of many Americans, especially low-income and minority students (Conner & Rabovsky, 2011).

The Great Recession that began in 2007 intensified this problem. Its devastating socioeconomic effects in society, including growing income and wealth inequality, have achieved levels similar to those of the Great Depression of the 1930s (Stinglitz, 2013; Dar, 2014). The decline in higher education affordability has brought to the forefront the pressing need for more scholarship about the political and ethical dimensions of higher education policy, especially in difficult economic times (Dar, 2014). The performance of American public colleges and universities has become a topic of great concern. The urgency to improve economic conditions has placed added pressure on postsecondary systems to produce

graduates at a higher rate in order to increase the educated workforce and foster the numerous social returns attached to education (Ma et al. 2016; Combs, 2014; Conner & Rabovsky, 2011).

State governments have long played the lead policy role in higher and postsecondary education, since they determine the levels and types of public financial resources to invest in education. Furthermore, states control the systems that provide oversight and accountability for the performance of schools and also enact policies that affect the configuration of the educational system (McLendon & Perna, 2014; St. John et al., 2013; Perna and Finney, 2014; St. John et al., 2013). Though they operate in ways that are autonomous to some extent, 70 percent of all college students are in public institutions that are under state management and regulation. States' regulatory clout even affects private institutions that benefit from state funding, binding them to numerous state regulations (National Center for Education Statistics, 2012; Doyle & Zumeta, 2014). In sum, policy makers and their regulatory decisions are key factors in determining the future of education attainment in the U.S. (McLendon & Perna, 2014).

Policy makers have sought solutions to improve the performance and cost-effectiveness of public institutions (Cornner & Rabovsky, 2011; St. John et al., 2013). For the last two decades, policy innovations have been common in several areas of higher education. Among many developments, state governments have adopted a number of new financial policies and programs such as merit-based scholarships, prepaid tuition programs, college savings plans, and differentiated tuition charges (McLendon & Perna, 2014). States have enacted numerous structural changes in the ways that they coordinate and govern their systems of higher education while also undertaking new approaches to holding institutions accountable

for their performance (McLendon, Hearn, & Deaton, 2006; Tandberg & Hillman, 2014). States have also implemented polices designed to improve student transition from K-12 into higher education and from two-year to four-year institutions (Ewell, Boke, & Zis, 2008). States have tried to improve data systems to allow state governments to follow students' movement through the educational pipeline as well as improve decision-making by educational policy makers and practitioners (Perna & Finney, 2014). State regimes have created boards to align goals and ease transition from K-12 to postsecondary educational systems. Policy makers have also promoted cooperative efforts like dual enrollment or articulation agreements to seal fissures in the educational pipeline (Ewell, Boke, & Zis, 2008). States and philanthropic foundations have tried partnerships to pilot and scale different educational programs (McLendon & Perna, 2014).

Many of these new programs and policies aim to increase college attainment (Jones, 2013; McLendon, & Perna; 2014). However, as Doyle and Zumeta (2014) point out, other objectives have also driven these agendas, such as reducing internal spending to deal with downturns in revenues. To achieve this goal, state governments have emphasized policies that promote cost controls and low-cost providers. From 1994 to 2014, many states reduced the dependence of higher education institutions on state budgets by decreasing the amount of states' investment in their higher education systems while increasing the proportion of the costs absorbed by individuals and families (Rizzo, 2004; St. John et al., 2013).

Rizzo (2004) found that since 1983, most states have reduced the percentage of their budgets dedicated to higher education. While in the past this support typically decreased during difficult economic times and increased during periods of prosperity (Deleney & Doyle, 2011), this trend was interrupted after 2007 (Doyle & Zumeta, 2014). Some scholars believe

that appropriations have stagnated even during periods of economic improvement and may never recover (McLendon & Perna, 2014; St. John et al., 2013).

Additionally, during the last three decades, state governments and higher education institutions have engaged in what is known as "grand bargaining," providing more autonomy to colleges and universities in exchange for lower funding (Doyle & Zumeta, 2014). In 1990, for instance, Illinois gave regulatory power to the individual boards of each state university giving them authority over their own tuition rates (Perna & Finney, 2014). At the same time, Illinois reduced its budgetary support to higher education. As a result of this change, the tuition of Illinois state universities has been rising. This may be contributing to the decline of baccalaureate attainment in the state over the same period (Perna & Finney, 2014).

Despite state efforts to foster higher education attainment but also reduce costs, rates of baccalaureate achievement have flattened during the last 20 years. The low overall rates of college preparation, participation, and completion by students from low-income families and racial and ethnic minority groups indicate that current public policies have not yet achieved their stated effects (Perna & Kurban, 2013). Furthermore, some of the changes of recent decades—merit-aid scholarship programs, declining state appropriations for higher education institutions, and performance funding—may have undercut efforts to improve higher education attainment (e.g., Dynarski, 2002; Hillman & Orians, 2013; Hillman & Tandbeg, 2013).

The prevalence of state policy innovation calls for scholarship that provides the empirical, theoretical, and applied policy insights required to evaluate the role of state policies in higher education attainment (Perna & McLendon, 2014; St. John et al, 2013; 2018). According to scholars, investigators should better understand the relationship between state policy and college preparation, affordability, participation, and completion so they can

effectively use finite public resources to design plans that meet the need for increased educational opportunities. Leaders should pursue policies that address the inequity in higher education attainment that exists across demographic groups to improve the social mobility and economic growth of their populations (Perna & McLendon, 2014). This study seeks to elucidate the relationship between state policy and educational attainment by evaluating the effects of state adoption of CCB policies on enrollment and completion in higher education.

Community College Baccalaureates Background

Community colleges that confer baccalaureate degrees often must make drastic organizational changes (Burrows, 2002; Plecha, 2007; Thor & Bustamante, 2013). In the past two decades, community colleges in 22 states have gained governmental approval to provide baccalaureate programing (AACC, 2017). In 1993 only Vermont, West Virginia, and Utah allowed some community colleges to offer four-year degrees. Today, approximately 70 community colleges offer four-year degrees, 7 percent of all community colleges in the country (AACC, 2015; Chronicle of Higher Education, 2014). Though limited to a small number of degree programs, this is an important change in the field of higher education because it defies fundamental conventions about the mission of two-year colleges. If the trend continues and CCBs proliferate, it could threaten to upset the existing equilibrium between the two– and four-year sectors of the higher education system (Russell, 2010).

Higher education scholars have investigated this issue mainly at the organizational level, examining the point of view of administrators, faculty, and students at institutions that have undergone this change. Using case study and survey methods, they have identified a variety of demographic, economic, and structural conditions that encourage community colleges to offer baccalaureate degrees. According to empirical research, nontraditional and location-bound

students with work and family commitments fuel the demand for bachelor's degrees at community colleges. This prior research also shows that new degree offerings are intended to serve the needs of local industry and employers. Universities that are becoming more focused on research and graduate education at the expense of undergraduate instruction also drive students toward community colleges (Bemmel, Floyd, & Bryan, 2009; Burrows, 2002; D. Floyd & Arnauld, 2007; Furlong, 2005; McKee, 2001; McKee, 2005; Petrosian, 2010, 2017; Petry, 2006; Plecha, 2007; Remington & Remington, 2005).

The few scholars who have investigated the format of state policies on this issue have probed the motives of government officials (Levin, 2004, 2006; Slonik, 2009), their political strategies (Burrows, 2002; Pershing, 2006), and the conditions necessary to achieve statewide policy change (Rudd, Bragg, & Townsend, 2010) that empower community colleges to award baccalaureate degrees. These researchers have identified concerns of legislators who support this policy change: anxiety about the capacity of their higher education systems to provide baccalaureate degrees to an increasing number of students; failure of community colleges to transfer their students to four-year institutions; and low rates of baccalaureate production within the state (Bemmel et al., 2009; Manias, 2007; McKinney & Morris, 2010).

However, empirical research shows that some of these concerns about limited baccalaureate availability appear unfounded, yet policy makers cite them to gain support for CCBs (Burrows, 2002; Henderson, 2014; Pershing, 2006). Recently, Henderson's (2014) longitudinal analysis of state CCB adoption from 1989 to 2007 found that other political and structural factors were also important in explaining states' decisions to implement this policy. Consolidated governing board structures, board approval for CCB adoption, and Democratic Party control of state legislatures were more likely to result in adoption of CCBs.

Overall research on the evaluation of CCB policies is scant, and scholars have focused their efforts on investigating the cost- effectiveness of these programs (Bemmel, 2008; Bottorff, 2011). In Florida, it was found that baccalaureate degrees are less costly for state governments, taxpayers, and students but that community colleges also receive less funding when they provide these services. Regarding access, Manias (2007) explored whether offering a four-year degree increased enrollment at several CCBs in Florida. He found that enrollment in these institutions increased because they attracted students who were planning to attend state universities and others who had not planned to continue to the baccalaureate level. Daun-Barnett (2011) did the only national longitudinal study evaluating whether a CCB policy augmented the number of nursing degrees produced, finding that adopter states produced more nurses than non-adopters. In general, the literature on CCBs provides a good understanding of the motivations and assumptions behind this change. Yet it tells us little about the impact on overall degree attainment, especially for underrepresented student populations. Since some states have not implemented CCBs, we can evaluate the factors driving certain states to do so and investigate the impact of these policies on states' educational equity outcomes.

Purpose and Significance of the Study

The purpose of this study is to evaluate whether there is an impact in enrollment and graduation rates in states adopting a CCB policy. This study examines how this policy affects undergraduate graduation rate and enrollment at public institutions for all students and for Latinos specifically. The policy seeks to address the desire of policy makers to increase educational offerings and degree attainment while reducing state funding using the overloaded community college sector, which already has a reputation for increasing students' time-to-degree and for low transfer and graduation rates (Bound, Lovenheim and Turner, 2012).

CCB implementation differs from other popular policy innovations like performance funding and merit-based student aid in that its design and execution is not controlled, directed, or organized by state regulators and legislators but is often initiated by the leaders of community colleges who plan, build coalitions, and lobby for it (McKinney & Morris; Plecha, 2007; Burrows, 2002). Evaluating such a policy might explain state policy failure or success by identifying what forces contribute to the adoption, implementation, and sustainability of policies. This research will help policy scholars fill a void in current higher education policy literature (McLendon & Perna, 2014).

Equity Considerations of CCB Policies

More importantly, state policies that affect community colleges take us to the heart of equity questions that have concerned higher education scholars for many years. Dar (2014) challenges research to ask "what equity means, what should be equalized, and what are the trade-offs involved to achieve higher efficiency, effectiveness, educational quality, and collective well-being" (p. 535). An analysis of CCB state policies and their impact on educational outcomes will address the argument that equality, equity, and efficiency can oppose *or* fortify policy goals. These normative issues are important in understanding and evaluating higher education policy (Dar, 2014).

Community colleges have long been central in the discussion about equity, and their role and effectiveness has been disputed for years (Dar, 2014). Some argue that community colleges function to democratize education by giving an opportunity to those who cannot otherwise enter into other higher education institutions (Cohen & Brawer, 2008). Others maintain that community colleges were created as a tool to drive promising but less-prepared students from selective intuitions and entice them with technical degrees (Brint & Karabel,

1989; Clark, 1960). These different points of view have yet to be reconciled. Community colleges act as a means to promote access to higher education for low-income, minority students and promote workforce development. At the same time, they play a role in the growing stratification of higher education by race and socioeconomic status, with the most disadvantaged students disproportionately attending these institutions (Dowd 2003, Dar, 2014). The questions of who deserves postsecondary and for what purposes are crucial when discussing community colleges. These institutions provide multiple services to the student population they serve, which is disproportionately nontraditional, underrepresented, low-income, and first-generation (Barh, 2013; Bragg, 2013). The CCB phenomenon raises more questions about the role of these institutions.

Carnevale & Strohl (2013), in their analysis of enrollment trends at 4,400 postsecondary institutions, found that, from 1995 to 2010, 82 percent of new White student enrollments were at the 468 most selective colleges, while 72 percent of new Hispanic enrollment and 68 percent of new African-American enrollment were at two-year, open-access schools, many of which are community colleges. They also learned that resources allocated to these different educational paths impact educational attainment. Selective colleges spend between two and five times as much money on instruction per student as open-access colleges. They graduate an average 70 percent of their students in six years compared to 32 percent of open-admission public colleges (Carnevale & Strohl, 2013; NCES, 2014). Thus, policies that influence the community college system could affect the participation of historically underrepresented populations in higher education, and their representation in different academic programs. These policies are relevant to issues of equity, understood as the creation of opportunities for equal access and success in higher education among historically

underrepresented student populations (Bensimon, 2009).

Equity concerns fuel the arguments promoting or discouraging the adoption of these policies. Some scholars argue that for nontraditional students tied to a particular area by family or work, CCBs enhance accessibility and make college more possible (Bragg, 2013). Yet critics point to the likelihood that two-year colleges now offering four-year degrees may discontinue open-door admissions policies. These scholars caution that because of the intensive changes that community colleges have to undergo to offer CCBs, community colleges will, over time, gradually raise admissions standards to the point where many unprepared and underprivileged students will lose the opportunity to educate themselves (Jenkins, 2015, Townsend 2005). Some scholars support CCB policy on the grounds that it will make bachelor's degrees more accessible to community college students (Dougherty; 2001; Floyd, 2005). Approximately one in four students with low-income and minority backgrounds successfully transfer to four-year institutions despite their expectations of obtaining a bachelor's degree when they enter a community college (Melguizo, Kienzl, Kosiewicz, 2013). Opposing views, however, caution that community college degrees will not be well valued on the job market if provided by less prestigious institutions (Townsend 2005; Petrosian, 2017).

A CCB policy also raises questions about disparities in resource allocation among institutions and whether funding takes into account students' relative disadvantages and diverse educational needs (Dar, 2014). Nationally, more undergraduates are entering college with inadequate reading, writing, and mathematics skills. This is particularly true for students who attend community colleges or are from low-income families (Ewell, Boeke & Zis, 2008). Regardless, there is a great divide between selective versus open-access institutions when it comes to resource allocation and spending on students. Community colleges are at the greatest

disadvantage because they receive the lowest levels of funding per student, on average, while serving those with the greatest needs (Carnevale & Strohl 2013; Ortega, Frye, Nellum, Kamimura, &Vidal-Rodriguez, 2014).

Consequently, CCBs raise the concern that adding baccalaureate programing and degrees will dilute community college resources allocated to their traditional programs of vocational, continuing, and remedial education. Some fear that community colleges will neglect these other missions to focus on baccalaureate education, which might prove inefficient given that many state universities provide bachelor's degrees (Jenkins, 2015). Thus, CCBs raise concerns about states giving already underfunded community colleges more responsibilities. This study asks may shed light on how best to structure a state's higher education system to encourage greater numbers of baccalaureate degrees among underrepresented students when transfer rates from two– to four-year institutions remain low.

Latino Educational Attainment and the CCB

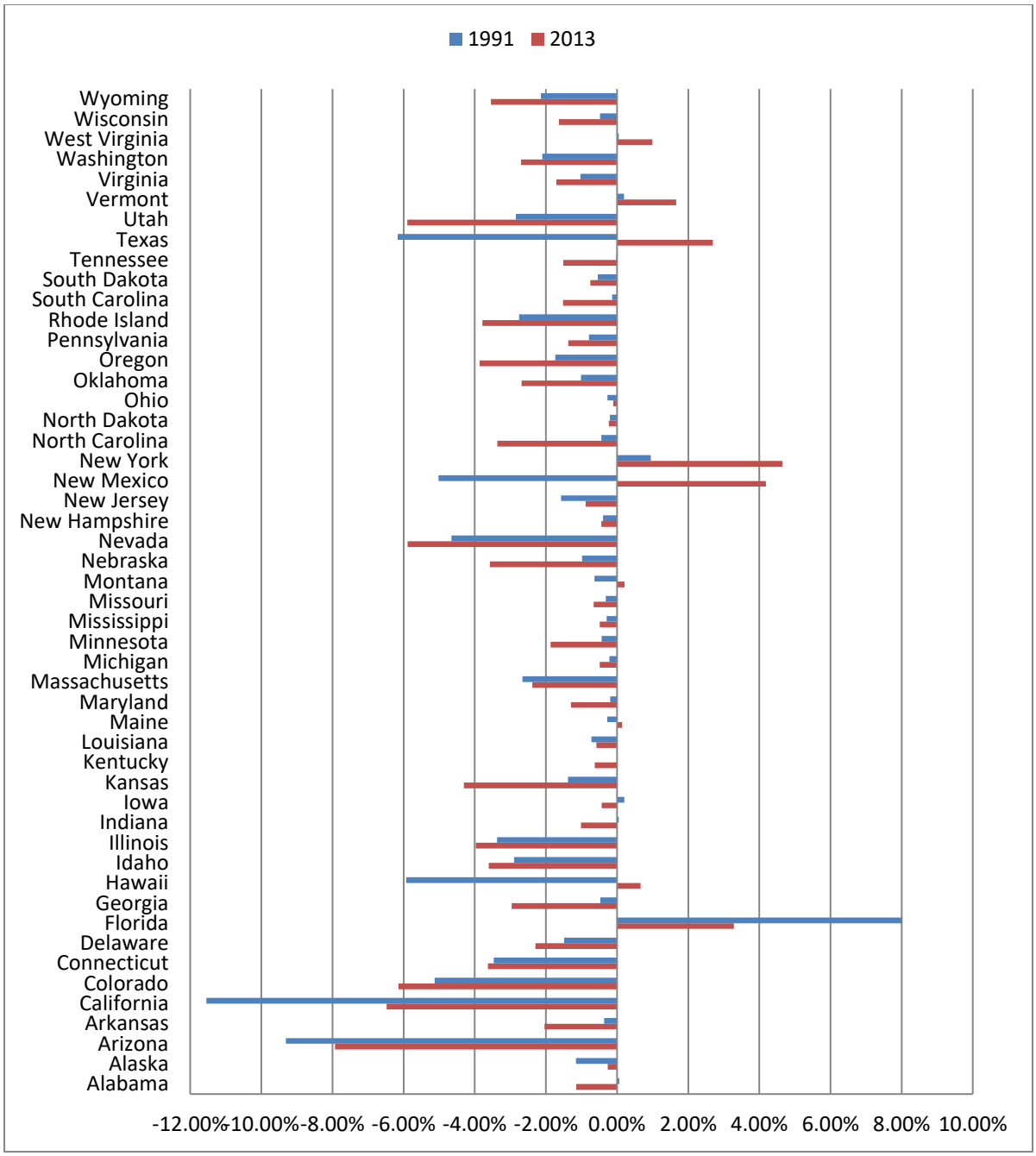
Latinos represent the nation's largest minority group and the fastest-growing segment of our society. The estimated 58.9 million Latinos living in the United States in 2018 made up 18.1 percent of the total population; and Latinos account for 50 percent of population growth since the year 2000 (Flores, Lopez & Radaford, 2015; U.S. Census; 2018). Though traditionally concentrated in the West and Southwest, Latinos now represent 19 percent of the population in other parts of the country like the Mountain west and some states in the Northeast region (Pew Research Center, 2014).

Today, 25 percent of the K-12 students in the United States are Latinos, (Excellencia in Education, 2018), and although educational attainment rates for Latinos have improved steadily over time, they continue to lag far behind the national average. Only 22% of Latinos adults of 25

years old and older hold an associate degree or higher compared to the national average of 39%. Moreover, Latino students are still underrepresented in Public 4 year institutions in many states (Excellencia in Education, 2018).

Figure I.1 compares the percent of Latino undergraduate enrollment in Public 4-year institution to the percentage of Latino population in the each state in 1990 and 2014. Perfect representation would be equal to cero. Thus, the columns to the left of the cero indicate underrepresentation of Latino undergraduates in Public 4-years and columns to the right overrepresentation.

Figure I.1 indicates inequities in access to public -4yqr education for Latinos in majority of the states. Although there is variation across states in representation of Latinos in public 4 year colleges, only 4 states had representation at least equaling the representation of the population. These states (Main, Maryland, North Dakota, Ohio,) have relatively low percentages of Latino Population. Florida and New York show a history of overrepresentation of Latino in public 4 years institutions that maybe related to their history of receiving high-income Latino immigrant communities. Texas, New Mexico and Hawaii improved the representation of Latinos in public-4year institutions. However, all other states indicate underrepresentation of Latinos in public four-year education. Including California, Arizona and Nevada that have high percentage of Latino population. Although Latinos have improved their enrolling numbers over this period, in many states there are still inequities in access to higher education that need to be addressed.



Notes: Underrepresentation or overrepresentation is calculated as the difference between the percent of Latino undergraduate enrollment in Public 4-year institution minus the percentage of Latino population in the state during that specific year. Perfect representation would be equal to cero. Thus, underrepresentation of Latino undergraduates in Public 4-years is shown to the left of the cero and overrepresentation to the right of the cero line.

Figure I.1. Comparison of Latino share of total enrollment in Public 4-Year institutions to the share of Latino State Population, 1991 and 2012. Source: Calculated from U.S. Census and from Delta Cost Project Total Undergraduate Enrollment.

The equity gap in postsecondary completion rates among Latinos and other demographic groups is also a concern. The graduation rates for Latino undergraduate students is 41% compared to 52% of White students (Excellencia in Education, 2018). These educational inequities are a worrisome because the dramatic impact bachelor's degrees have on earning potential for individuals and the future economic well-being of the nation. According the U.S. Bureau of Labor Statistics (2018), as educational attainment rises, earnings increase and unemployment decreases. This is especially important for Latinos that in in average have 42% lower median family income than Asians and 27% lower than Whites families (Census Bureau 2016). Thus, the inability to educate Latinos may stop this population to close income and inequity gaps and perpetuate poverty circles.

On regards the CCB, this study focus on Latinos because 44 percent of Latino undergraduates are enrolled at community colleges (Community College Research Center, 2018). Thus, the public 2-year sector has an important role on offering educational access and improving educational outcomes for this population. Structural changes in the two-year public sector such as CCB may influence how community colleges continue to serve this population and its role to perpetuate or improve inequalities in education for this population.

Nonetheless, literature and policy makers seldom bring to the forefront of the discussion of how a CCB policy affects Latino students. There are only three studies that focus on how the CCB affects Latinos (Gandara and Cuelllar, 2016; Park et al.; 2016**;** Porter et al., 2014) and policy makers are usually salient about effects of CCB specifically in this and other underrepresented groups. The literature on CCB however seems to capture that proponents of this policy believe that this change will help all students attending community colleges going

through this transformations, and that include Latinos (Gandara and Cuelllar, 2016). This study explores this assumption.

Trends in State Policy and the CCB

The CCB as a public policy also fits into two trends of state policy discussed previously: the focus on attainment goals and diminishment of higher education expenses for state governments. In the U.S., enrollment at different types of institutions carries dissimilar per-student costs, with greater subsidies for students at research universities when compared to other institutions, including community colleges. States can save costs by prompting students to enroll at these lower-cost institutions (Doyle & Zumeta, 2014). The numerous policies aimed at shifting student enrollment to community colleges include articulation agreements between two– and four-year institutions, two-plus-two agreements, enhancement of online education, creation of university centers, and the transformation of community colleges into baccalaureate institutions (Doyle & Zumeta, 2014, Floyd, 2005). It is imperative to investigate whether CCB policy is capable of achieving the twin goals of cost reduction and increasing attainment of baccalaureate education.

CCB policy adoption is also aligned with the grand bargaining approach followed by state policy makers in recent decades. Under CCB regulation, community colleges have more autonomy in the types of degrees they can offer. This allows them to compete for bigger segments of the student market. However, the appropriations that community colleges receive to provide these services are lower than those received by state universities (Bemmel, 2007; Bottfford, 2011). The scholars who first researchedthe concept of grand bargaining have cautioned that this strategy suits the interests of some research universities, especially flagship campuses, better than the interests of other institutions (Doyle & Zumeta, 2014). They indicate

that less prestigious schools, such as community colleges, generally have fewer options than research universities for alternative revenue streams. They warn that because they enroll fewer wealthy students, these schools have considerably less market power to raise tuition sharply or attract out-of-state students. They also warn that community colleges tend to lack alumni who can make large donations. By definition, these institutions lack the vast research base to generate revenue through the commercialization of research discoveries. Some innovative institutions in the less prestigious group may be able to survive with widely marketed online courses, contract-funded programs, recruitment of international students anxious for a U.S degree (Doyle & Zumeta, 2014), or the availability of baccalaureate degrees. The CCB might ultimately be a part of this grand bargain. As such, its attainment results should be evaluated to build a larger, more comprehensive picture of how that bargain is working to respond to growing disparities in educational achievement across socioeconomic and racial groups. CCBs could also be playing a role in discounting tuition rates because community colleges usually provide baccalaureate degrees at lower prices than state universities (Bemmel, 2007; Bottfortt, 2011). This improves opportunities for low-income students but also tends to transfer resources to middle– and upper-income students (Hillman, 2010). In the wake of the Great Recession of 2007, community colleges play a crucial role in the discussion of increasing the number of higher education degrees. It is imperative, therefore, that CCB policy is evaluated in terms of its effect on students from different income and racial and ethnic backgrounds**.**

Although students' likelihood of success after admission is highly correlated with prior preparation levels and background characteristics, states' spending choices and institutions' internal resource allocation strategies directly shape outcomes (Bragg & Durham, 2012*).*

Scholars interested in community colleges have called for ambitious reforms that would affect the entire student experience. They argue that reforms that focus on only one stage, such as remediation or counseling for course selection, will have, at best, only modest effects (Dougherty, 2001; Barley, 2012). The CCB is a bold reform that extends beyond the traditional functions of community colleges. This reform, however, has seldom been evaluated on the basis of its outcomes for students.

This chapter has laid the foundation and established a context for the importance of state policies that affect the structure of higher education and influence student outcomes for different populations. Focusing on the community college baccalaureate, I propose investigating the effects of the policy in student outcomes specifically Latinos because they remain underrepresented in higher education (Figure I.1). The following research questions guide this investigation:

What is the relationship between a state's adoption of a CCB policy and higher education six-year completion rates in that state, specifically for Latino students?

- To what extent have CCB policies affected degree completion rates in participating states specifically for Latino students?
- To what extent have CCB policies affected undergraduate enrollment in participating states specifically for Latino students?

Chapter 2 examines in greater detail the literature that informs our current understanding of the CCB, its accompanying state policies, and its impact on educational outcomes. This work will draw upon theory and research in public policy, economics, organizational behavior, and higher education literature as the basis for a conceptual framework for this study. Subsequent chapters of the study then take the conceptual framework and

associate it with an analytical strategy for addressing the research questions that guide the dissertation. In chapter four, the results of these analyses are reported. In chapter five, these findings are further discussed, their implications are explored and series of conclusions are presented based on this research.

CHAPTER II

Conceptual Framework

The overall rate of baccalaureate achievement in the U.S. has stagnated, and the rates of college preparation, participation, and completion among low-income and minority students remain disproportionally low (Perna & Kurban, 2013). Public policies on higher education have clearly not yet achieved the goal of improving attainment rates for these populations. Furthermore, the escalation in the cost of higher education threatens to push college completion beyond the reach of many Americans, especially those traditionally underrepresented in higher education (Conner & Rabovsky, 2011). These are alarming concerns, given that these same groups are driving the demographics of population growth in the U.S. (Rutherford & Rabovsky, 2014).

Community colleges serve a student population that is disproportionately nontraditional, underrepresented, low-income, and first-generation (Barh, 2013; Bragg, 2013). The majority of new Latino and African American students enter two-year, open-access schools (Carnevale & Strohl, 2013). Consequently, state policies affecting community colleges have the potential to either positively or negatively influence equity in educational outcomes. Nonetheless, there has been little explicit discussion of equity issues in states that have adopted a CCB policy.

The research questions posed in this study touch upon three primary areas of scholarship: literature on the community college baccalaureate phenomenon, higher education

literature on policy adoption and evaluation, and regulation theory. The vast quantity of literature in each of these areas prohibits a comprehensive review of the literature in each category and would be of little use for the purposes of this study. Therefore, I will provide synopses of the most relevant literature. Following a policy evaluation tradition (Baldwin, Cave, & Lodge, 2012) I will present the rationales for policy intervention, policy objectives, the intended effects of the policy, and policy alternatives. Then, following a critical empirical approach (St. John et al, 2013), I will compare and contrast the various policy rationales and the justifications for adopting a Community College Baccalaureate (CCB) policy with the current literature on the impact of the CCB. Finally, I will present the evaluation framework which I propose to assess the impact of this policy and guide the statistical model used to do this evaluation.

The CCB Phenomenon as a Regulatory Change in Higher Education

This investigation conceives the CCB phenomenon as a regulatory change. According to Baldwin, Cave, & Lodge (2012) regulation is defined in this context as a sustained, focused control exercised by an agency over activities that are valued throughout the community. It involves the promulgation of binding sets of rules to be applied by relevant bodies. It encompasses all state actions that are designed to influence business or social behavior as well as mechanisms affecting behavior of other sources, such as trade bodies or professional organizations. Regulation may restrict or facilitate behavior, and its effects can be either deliberate or merely incidental (Baldwin et al., 2012).

Generally, the transformation of a community college to a CCB requires legislative approval, or at a minimum the approval of a system-wide governing body (AASCU, 2010). Normally, before statewide rules are changed to allow community colleges to confer their own

baccalaureate degrees, there is a thorough review process though which economic issues are documented, alternatives explored and exhausted, costs estimated, and community college capacity determined (AASCU, 2010; McKinney et al., 2013). In addition to considering issues of economics and capability, legislators and higher education authorities encounter different interest groups lobbying for and against this regulatory change (Burrows, 2002; Thor & Bustamante (2012). Through a political process, states decide whether they will modify the structure of their higher education system to allow CCBs (Pershin, 2006).

Arizona debated this issue starting in 1997, exemplifying its political dimensions. In 2005, a bill that would allow ten Arizona community colleges to offer four-year degrees in workforce-related fields passed in the state's house (AASCU, 2010). The bill, opposed by the three state universities, was later defeated in the state senate appropriations committee. Similarly, in Illinois, after many years of debate and lobbying, the Illinois Board of Higher Education rejected a proposal from Harper College, a two-year institution, to pilot a four-year degree program (AASCU, 2010).

Rationales for Regulatory Change, Policy Objectives, and the Intended Effects of the Policy

Understanding policy makers' rationales for a change is an integral part of evaluating a policy (St. John et al., 2013). These rationales have long been studied by many disciplines. For at least a century, political economists have utilized sociological, political, economic, philosophical, and anthropological concepts to explain why government representatives decide for or against certain policies. Their theoretical insights offer a structure to assess the reasons, goals, and assumptions of the CCB policy, compare them to alternatives, and evaluate the justifications used in adopting this policy with existing research on CCBs.

CCB response to public interest.

According to the literature, policy makers approve CCBs to respond to several public needs at the local and state levels. At the local level, community colleges exist to expand access to the baccalaureate degree to students who are location bound for varying reasons such as family and job commitments or who are living in remote or underserved areas (Bemmel, Floyd, & Bryan, 2009; Burrows, 2002; Dyck, 2011; D. L. Floyd & Walker, 2009; D. Floyd & Arnauld, 2007; Hofland, 2011; Levin, 2004; Levin, 2006a; McKinney & Morris, 2010; Petrosian, 2010; Petry, 2006; Plecha, 2007). CCBs are also designed to increase the affordability of a bachelor's degree in general and reduce the costs in their states specifically, extending availability to low-income students who could not afford tuition, commuting, room and board, or relocation costs (Bemmel et al., 2009; Petry, 2006; Plecha, 2007).

State governments are also concerned with a "shortage of degree-granting institutions" in areas where high population growth or density is not matched by increased capacity at four-year institutions (Burrows, 2002; Dyck, 2011, McKinney& Morris; Plecha 2007). Other researchers have found that policy makers see the CCB as an economic engine and are usually concerned about the shortage of qualified workers in areas that serve the needs of local employers, such as nursing, education, computer science, business, and industrial operation management.

Public interest theorists maintain that government and public agencies create policies that seek to correct market problems: failure of competition, unequal distribution of wealth, under-provision of public goods, information breakdowns, unemployment, inflation, and inequitable market practices (Samuelson & Nordhaus, 1999). Under a public interest theory lens, the CCB policy is adopted to respond to the needs of the students in their localities and

correct a market failure in which neither student nor industry demands are satisfied by the number of higher education institutions offering baccalaureate degrees. The strategic locations, established facilities, and lower tuition costs of community colleges appeal to legislators as a viable alternative to respond to student demand and provide easier access to a baccalaureate degree (Manias, 2007; McKinney, et al., 2010; McKinneay et al., 2013). Legislators also hope that CCBs will fill the gap between supply and demand of qualified personnel in expanding local industries, thus promoting economic development.

CCB public interest rationales and equity in educational outcomes.

Public interest policy theory is also concerned with equity issues. Equality of educational opportunity is a value widely held by Americans (DesJardins, 2001). They support the idea that community members who have the ability to succeed in college should not be hampered by financial or other barriers, such as disparities in previous academic preparation (DesJardins, 2001; Cohen & Brawer, 2008). At first glance, it appears that legislators' efficiency based rationales of responding to consumers and industry demands have the implicit purpose of improving equity of attainment outcomes for students belonging to groups traditionally underrepresented in higher education. This is an easy assumption because community colleges serve large numbers of these students. Increasing efficiency through a CCB policy could expand the amount of resources available and create a more equitable distribution of educational opportunity (DesJardins, 2001). But what if this were not the case? The possibility exists that, because of the rising cost of higher education, middle-class students seeking alternative educational options are currently driving the demand for CCB programs. Making bachelor's degree programs available at community colleges could incentivize

students who can afford state or private university tuition to attend a CCB to save money on room and board or other expenses. If true, the CCB might not be "expanding" resources but rather reallocating them.

There is also the prospect that two-year colleges now offering four-year degrees could discontinue their historic open-door admissions policies, thus reducing educational equity. Community colleges complying with accreditation requirements and responding to the intensive changes required to offer this new service could be attracted by strong incentives that would gradually raise both tuition and admissions standards (Plecha, 2007; Townsend 2005). Therefore, a regulatory change created to respond to the needs of low-income students could ultimately deny many underprepared and underprivileged people the opportunity to educate themselves (Jenkins, 2015, Townsend 2005).

In response to workforce shortages rationales, it is plausible that professionals who have already obtained associate college credentials and are location bound because of their jobs are the ones taking advantage of the new degrees (Daun-Barnett, 2011). In this setting, these workers would gain more knowledge and become better prepared—a positive consequence, but one that fails to address the bottleneck problems of having enough personnel to provide as many services as needed.

These scenarios are counterintuitive to regulators' rationales. Rationalizing policy based on efficiency concepts like demand, which usually aggregate many different groups of people, could lead regulators to neglect other important considerations under the same public interest theory. Dividing big aggregations into specific groups that reflect equity considerations (Bensimon, 2004), such as low– or middle-income students or by ethnic and racial groups which tend to lack academic preparedness, would build a stronger public rationale framework

to make decisions regarding a CCB policy. This is one motivation for focusing on the impact of Latino Students.

CCB Elimination of Transactions.

CCB research indicates that policy makers are usually frustrated by the lack of collaboration by individual universities and community colleges to implement solutions that facilitate access to baccalaureate degrees and simplify the transfer process for community college students (Remington &Remington, 2005; 2013; Petrosian, 2017). Giving community colleges the authority to confer baccalaureate degrees creates another path that does not require such cooperation among two– and four-year institutions (Floyd, 2005). Using this rationale, policy makers can use a CCB regulation to eliminate problems arising from lack of institutional coordination.

This rationale is well aligned with the transactional costs view of regulation (Williamson, 1991) in which public intervention seeks to facilitate coordination among organizations that commonly transact with one another. A transactional cost is attached to the use of resources and the effort necessary to solve coordination issues, especially if the parties do not operate harmoniously or are there frequent misunderstandings and conflicts that lead to delays, breakdowns, and other malfunctions. Transaction cost analysis examines the comparative costs of planning, adapting, and monitoring task completion under alternative governance structures. Policy adoption and public intervention can aim to reduce such costs and problems (Williamson, 1991).

The broadly used metaphor of the educational pipeline serves to illustrate how CCB policies are a result of these concerns. In higher education literature, a student's educational

progress has been described as a progress through a pipeline constructed by different sectors or stations beyond which the student must pass: K-12, community college, baccalaureate, master's, and PhD. Community colleges and four-year institutions are distinct organizations in the pipeline whose institutional practices and norms may fail to align or, at times, even work at cross-purposes. A community college student can only acquire remedial education and the first two years of a baccalaureate education. The junior and senior years offered by universities have different objectives, missions, and governance structures than community colleges.

Coordinating the acceptance of similar credits with learning objectives is complex because the two sectors have incentives to offer courses that make their academic program unique. Other considerations, such as the age of credits and aligning them with a matching course of study, also complicate this synchronization (Ewell et al., 2008). Transferring students from community colleges to baccalaureate institutions, therefore, requires coordination and collaboration among institutions (Ewell et al., 2008).

Under a transactional cost view, organizations and governments can streamline transactions using contracts or legislation that specify the terms of the collaboration and provisions to resolve foreseeable problems (Williamson, 1991). Articulation agreements at the state and institutional levels exemplify these efforts. For a number of years, state governments have implemented varied policies to promote collaboration among sectors and implemented policies that facilitate student transfer procedures (Ewell et al., 2008; Roska, 2008). Nevertheless, coordinating credit transfer is not enough to streamline the transfer process (Ewell et al, 2008; Roska, 2008). Articulation agreements are contracts, and in the view of transactional cost theory, all complex contracts are unavoidably incomplete. Parties are eventually confronted with the need to adapt to unanticipated disturbances that arise by reason

of gaps, errors, and omissions in the original contracts (Williamson, 1991).

Research indicates that articulation agreements have not increased transfer numbers (Bound et al., 2012). In order to promote successful transfers, two-year and four-year colleges need to work at developing close relationships and promoting the following services for transfer students: communication between college counselors, transparent credit transfer policies, scholarships and housing, assessment of the transfer student experience, transfer orientation, and a transfer center for students (Roska, 2008). This, of course, is costly and requires investment and additional resources from both types of institutions (Roska, 2008). Concerns with transfer rates are inherently attached to the CCB phenomenon because a central objective of state policy in higher education is to move larger numbers of students through the educational pipeline to attain college degrees. The transition from two-year to four- year institutions directly affects the number of college graduates that the state can generate (Ewell, Boeke, & Zis, 2008). Although transferring students to four-year institutions remains a central mission of the community college sector, only a minority makes such transfer due to the challenges in the transition (Bailey & Morest, 2006; Smith, 2010).

These challenges may prompt legislators to promote CCBs to pave the way for students seeking baccalaureates in high-demand professions. When contracts, such as transfer agreements, are not sufficient to mitigate coordination problems, organizations might consider providing the services themselves (Williamson, 1979). Legislators who are unsatisfied with the results of articulation agreements then try to eliminate coordination and transaction costs characteristic of the transfer process by allowing community colleges to offer the baccalaureate degree and increasing the number of graduates (Burrows, 2002).

CCB elimination of transactional cost, equity in educational outcomes.

The analysis of legislators' rationales under a transactional cost theory is also useful to evaluate the hidden assumptions of legislators that use CCB policy to resolve transfer issues. Under a transactional cost view, organizations attempting to increase their control over an important service usually provided by another entity are adept at reproducing the technical requirements that enable them o provide a similar or better service (Williamson, 1979). A CCB policy assumes that community colleges that decide to provide baccalaureate degrees will have the technical capability to graduate students in bachelor's programs.

Regulations require that institutions offering a CCB comply with four-year accreditation standards, sometimes even before they are authorized to provide the degree (Floyd & Arnould, 2007; McKenney & Morris, 2010). Nevertheless, it is probable that, like many universities that must periodically meet requirements to be accredited, community colleges also fail to graduate the majority of their students and suffer from high attrition rates, especially among groups traditionally underrepresented in higher education. Northeastern Illinois University, for example, has been accredited for the last 20 years. Nevertheless, it has a 19 percent six-year graduation rate for full-time freshman students and an 8 percent graduation rate for African Americans (NEIU, 2017).

A close analysis of the CCB literature documents technical changes that a CCB institution must implement to provide competitive degrees (Bemmel, Floyd, & Bryan, 2009; Burrows, 2002; D. Floyd & Arnauld, 2007; Furlong, 2005; McKee, 2001; McKee, 2005; Petrosian, 2010; Petry, 2006; Plecha, 2007; Remington & Remington, 2005). Changes in the composition of faculty and improvements in library holdings and physical facilities are often reported, while improvements in other departments like academic advising frequently remain

unmentioned. Community colleges in general have dismal advisor-per-student ratios, and low success rates in this sector have been linked to that deficiency. This raises questions about the ability of CCBs to develop the technical capability to graduate students from such programs. It is also well known that community colleges have the lowest rates of funding per full-time student (Carnevale & Strohl, 2013). Funding per student is an important, and difficult to change, factor that may influence students' attainment (Ortega et al., 2013). It is unclear, therefore, that simply by implementing a CCB policy and solving the coordination issues inherent to the transfer process, a community college would be able to overcome these structural problems that hinder its success rates. Students' achievement while studying in a CCB program could be hindered by the same forces that hold down current transfer rates from community colleges.

A student's decision to enroll in a CCB could worsen her possibilities of graduation. It is a disconcerting parallel to eliminating transfer issues. Empirical evidence on the effects of CCB policy would shed light on to what extent the transfer process hinders graduation rates. It could also illuminate the capacity of CCBs to adopt new technical capabilities to increase underrepresented students' chances of obtaining a baccalaureate education.

CCB Catering to Special Interests.

Considering that historically four-year colleges and universities have a government-protected monopoly on students seeking baccalaureate degrees (Dougherty, 1994a), yet another rationale could be a factor in the CCB phenomenon. A CCB policy would allow community colleges to enter into new markets and thus increase enrollment, revenue (Daun-Barnett, 2011; Moker & McLendon, 2010), and political support (Bailey & Morest, 2004) by appealing to different students who seek baccalaureate degrees. According to Bailey & Morest (2004),

community colleges have strong incentives to expand their activities given the political and fiscal environments in which they operate.

Community colleges' resources are dependent on overall state and local priorities as well as a highly political process that determines appropriations and tuition (Bailey & Morest, 2004). New programs have the potential to create new constituencies that can in turn generate state and local- political support to maintain tax revenue (Bailey & Morest, 2004). Expansion strategies such as the CCB embed colleges within their local and regional environments by developing and strengthening ties to a broader cross-section of stakeholders (Bailey & Morest, 2004).

Regulation theorists, especially those advancing "capture theory" analyses, contend that policy processes are open to strategy manipulation (Hagg, 1997; Levine & Forrence, 1990). According to this school of thought, interest groups are willing to expend resources in the form of lobbying, campaign contributions, or other forms of political action to support policies that will increase their wealth or enhance the status quo. In formulating policy, public officials will therefore consider the costs and benefits of forming and maintaining the necessary coalitions with these interest groups to maintain themselves in office or heighten their power or wealth. At the same time, interest groups will consider the costs and benefits of influencing government to act in their favor. Consequently, policies that produce the most private gains for regulators and powerful interest groups will prevail during the regulatory process (Hagg, 1997; Levine & Forrence, 1990).

Scholars studying state policy adoption in higher education highlight the potential impact of interest groups and their lobbying efforts upon policy processes (McLendon, Hearn & Moker, 2009; Moker & McLendon, 2009; Tanberg, 2007; 2009; 2010). CCB policies could

be adopted because of the private gains produced for powerful interest groups and regulators. It is well documented that community college leaders frequently lobby for the right to provide their own baccalaureate degrees, and it can take several attempts before legislators and government officials support and approve their baccalaureate program plans (Floyd & Arnauld, 2007; Petry, 2006; Plecha, 2007; Thor & Bustamante, 2013).

Community colleges partner with community representatives such as school boards and chamber of commerce leaders to advocate for CCB status. During this process, community colleges and their advocates consider the costs and benefits of influencing government to act in their favor, as proposed by the agency theory of regulation. These alliances assist community colleges with securing the various resources (technical, financial, and political support) necessary to promote CCB policy (Bemmel et al., 2009; Burrows, 2002; Furlong, 2005; McKee, 2001; McKee, 2005; Remington & Remington, 2005).

During the political process of considering a CCB policy, other powerful interest groups like universities, private four-year colleges, university branch campuses, and local boards commonly form coalitions to lobby against this policy change (Remington & Remington, 2005; Rudd et al., 2010; Thor & Bustamante 2013). Consequently, when approving CCBs in their states, public officials might consider the costs and benefits of forming and maintaining the necessary coalitions with those opposing the policy as well as with advocates.

Often, government officials initiate conversations about CCBs (Burrows, 2002; Floyd & Arnauld, 2007; McKinney & Morris, 2010). According to Skolnik (2009), increasing access to higher education could be popular with local voters, and thus it is almost impossible to disentangle regulators' civic and personal interests. Local politicians might also benefit from strengthening ties to local industry that could finance their political campaigns by solving their

needs for qualified professionals with the implementation of a CCB in their local community (Burrows, 2002). It is no surprise, therefore, that city and county politicians usually offer strong political support for community colleges providing baccalaureate degrees (McKinney et al., 2013).

CCB special interest rationales and Latino equity in educational outcomes. Ascribing to the special interest theory, community colleges might offer a CCB to enhance their revenue or to strengthen their ties to the local community, in turn increasing their chances for survival. Given that 46 percent of Latino college students enter higher education via two-year institutions and represent 25 percent of the total enrollment at community colleges (Fry & Lopez, 2012), changes in the demographic composition of the U.S. could be a strong incentive for community colleges to offer baccalaureate degrees. That new service could keep growing numbers of Latino students paying tuition for longer periods of time instead of transferring to other universities. Serving a rising Latino population in their localities could strengthen ties to their local communities.

Latinos represent the fastest-growing segment of U.S. society. They account for 50 percent of population growth since the year 2000 (Flores, Lopez & Radaford, 2015). Therefore, this way of increasing ties in their community is good for community colleges. Though traditionally concentrated in the West and Southwest, Latinos accounted in 2014 for 19 percent of the population in the Mountain west and some states in the Northeast region (Pew Research Center, 2014). Regulators in many states could be appealing to Latino voters by providing increased access to higher education through CCBs.

In light of this demographic shift, analyzing the consequences of CCBs is important for policy makers. Regulators adopting a CCB policy private interests may help to reduce gaps in

educational and economic inequality. The U.S. appears to be incapable of educating the fastest-growing segment of the population adequately (Ortega et. all, 2013). In 2014, just 20 percent of Latino adults (25 and older) had earned an associate's degree or higher, compared to 36 percent of all American adults (Santiago, 2015). Furthermore, 41 percent of Latino first-time, full-time freshmen, graduated within 150 percent of program time compared to 50 percent of all students (Santiago, 2015). This gap is distressing, due to the dramatic impact bachelor's degrees have on earning potential for individuals and the future economic well-being of the nation (Ortega et al., 2013). Efforts targeting Latinos could raise U.S. postsecondary degree completion and attainment (Ortega et al., 2013).

In contrast, adopting a CCB for the benefit of special interests could be detrimental to these efforts. Politicians seeking electoral gains could be charging community colleges with more responsibility when they are already underfunded (De Los Santos & Cuamea, 2010; Mulnix, Bowden, & Lopez, 2002; Santiago, 2011). Since there are already plenty of state universities that provide bachelor's degrees, adopting a CCB policy could duplicate efforts and push community colleges to cut funding from their other missions of technical and developmental education that underprepared Latinos and others may need to succeed in higher education (Jenkins, 2015).

CCB Response to a Change of Ideology Guiding Public Policy.

Theorists explaining regulation cite the possibility of opportunistic behavior from regulatory and interest groups influencing public policy, reviving the old question of whether legislators can act altruistically while pursuing a variously defined "public interest" (Kau & Rubin, 1978; 1993). Laws may be passed out of self-interest or ideology (Kau & Rubin, 1979). The historical period in which CCB policies have been implemented, in which the theory and

practice of public sector management in the U.S. has undergone significant change (McLendon, Deaton and Hearn, 2007; St. John et al., 2013), point to another important rationale behind this adoption. During these last 20 years, "the century-old approach to the provision of public services through vast bureaucracies began to collapse in the face of critiques alleging inadequate government performance, responsiveness, and accountability" (McLendon et al., 2007, p. 645). Frameworks governing higher education shifted from a human capital view, in which both government and individuals made decisions about education based on economic and human (individual and social) returns, to a market logic in which education is a matter of individual rights and market competition (St. John, et al., 2013). These two frameworks lead to different preferences for state government spending and public subsidy of education (St. John, et al., 2013).

Higher education scholars interested in the effects of ideology on the policy process have found that higher education policy making does not stand apart from other political issues, such as health care and foreign policy (Doyle, 2010). Policy makers are choosing positions consistent with their understanding of their constituents' preferences (Doyle, 2007; Doyle 2010; St. John, 2013). They usually associate the conservative Republican emphasis for postsecondary education as concerned with the efficiency of higher education and keeping education costs down. On the liberal, Democratic side, policy makers seem less concerned with efficiency in higher education and more in favor of ensuring equality of opportunity (Doyle, 2007; Doyle 2010; St. John, 2013).

At the state level, the relation of ideology and policy adoption is murky. Ideology can impact policy decisions through state residents' ideology or the political affiliation of the governor or members of the state legislature (McLendon et al., 2006). Higher education

specialists in public policy have postulated that the relationships involving ideology, party lines, and policy adoption may be explained by the nature of the policy in place (McLendon et al., 2006). More specifically, whether the policy is distributive or redistributive is particularly important. Redistributive policies attempt to shift wealth, income, and other resources from the haves to the have-nots, while distributive policies address particular needs of an identifiable group, and the costs are shared among all taxpayers. Liberals might favor a CCB policy if they see it as a way to improve access and opportunity to education. Conservatives might support the issue if it promises reduced costs in higher education.

Henderson (2014) conducted a study to determine how various factors explain the adoption of the CCB. She found that states with Democratic-majority legislatures were more likely to adopt CCB policies. Her results contradicted previous research (mostly on the Florida system) that found Republican legislators to be the primary supporters of CCB policy. It also undermined the notion that reducing the cost of higher education drove CCB policy adoption. Levin (2006) found that concerns about access to higher education as well as economic or market considerations serve as rationales for the establishment of CCB programs. Thus, CCB policy appears to address both the educational opportunity concerns of Democrats as well as the efficiency concerns of Republicans.

A CCB policy could be considered a redistributive policy that takes resources from universities and allocates them to community colleges that serve primarily low-income students. Dar (2010) has investigated the share of higher education appropriations allocated among different types of institutions and students. For 49 states from 1976 to 2006, she found that having more Democrats in the state legislature shifts priorities from spending on research institutions toward vocational training, undergraduate education, and student financial aid.

Also, Democrats in liberal states favor spending on institutions versus providing help to individuals through mechanisms such as financial aid. Henderson's findings (2014), therefore, could be interpreted as characterizing the CCB as a redistributive policy supported mainly by Democratic legislatures that allows them to provide more funding to community colleges and their underserved populations.

The adoption of a CCB policy seems to fit well into two competing public policy ideologies: that of liberals concerned with increasing educational opportunity for needed groups, and that of conservatives concerned with decreasing higher education expenses for state governments. By adopting a CCB policy, legislators could improve attainment rates, trading resources from universities to community colleges that serve primarily low-income students (Dar, 2010). At the same time, policy makers could cut government expenditures by transforming community colleges into baccalaureate institutions while prompting students to enroll in lower-cost institutions (Doyle & Zumeta, 2014). Evaluating whether such a policy achieves both goals could encourage collaboration during the legislative process to implement creative changes in the higher education system that reconcile objectives of different political ideologies.

Policy Alternatives

Most state governments share the goals of improving access and attainment of higher education as well as promoting economic development in their jurisdictions (Perna et al., 2014). Allowing CCBs is one policy that seeks to promote both of these ends. There are 28 states in the U.S., however, that have not implemented CCB policies. These state governments may be using alternative policies to the CCB. State governments could task and fund state

universities to provide campuses that meet local demand for baccalaureates. The state of Washington established five branch campuses of the state public research universities in localities that showed demand for this service (Perna and Finney, 2014). Policy makers could also fund state universities to create distance-delivered programs and course offerings (Ewell et al., 2008; Perna & Finney, 2014). By 2008, 23 states had created Web-based integrated course catalogs to assist students seeking online degree programs or locating online courses (Ewell et al., 2008). In 2014, Maryland created a virtual university online (Perna & Finney, 2014). Each of these initiatives was undertaken to promote goals similar to those argued to rationalize CCB policies.

State policy makers have also supported other collaboration models among community colleges and universities to facilitate access to higher education, such as "two-plus-two" programs and university centers (D. Bragg, Townsend, & Ruud, 2009; Lorenzo, 2005). Students in two-plus-two programs can complete an associate's degree at a community college and then complete a distance-based bachelor's degree at a university (Bragg et al., 2009). In university centers, four-year institutions provide baccalaureate programing and the joint use of teaching and office space to two-year campuses (Lorenzo 2005). Other states have established consortia of institutions and provide distance education in a shared facility or on the Internet (Ewell et al., 2008).

State policy makers can also promote the proliferation of private and for-profit, four-year institutions in places with location-bound students. This may already be occurring: the majority of growth of institutions changing from two-year to four-year colleges has occurred in the private sector (Chronicle of Higher Education Almanac, 2011; 2012, 2013.) Encouraging enrollment in private institutions could expand the capacity of the state's higher education

system without investment in new public institutions (St. John et al., 2013; Perna & Finney, 2014). States could provide direct appropriations to private colleges and universities, such as is done in Maryland (Perna & Finney, 2014), or encourage enrollment in private colleges through state financial aid programs, as in Georgia, Illinois, Texas, and Washington (Perna & Finney, 2014).

Another CCB policy alternative includes smoothing the transfer process by incentivizing cooperation, as an increased number of institutions have done in the last three decades through articulation agreements (Dowd, 2008; Roska 2008; Ewell et al., 2008). Nevertheless, many states leave transfer governance and enforcement to individual institutions, forcing students to ensure that the transfer agreements are honored (Ewell et al., 2008).

States have also implemented alternative ways to earn college credit for those students already in the workforce. Examples include test-out provisions, under which students are assessed for mastery of course content and do not attend formal classes, and assessment of prior learning programs, in which students are awarded credit on the basis of work or life experience. Most colleges offer these popular alternatives for accelerating progress and earning college credit (Ewell et al., 2008). The availability of these programs online could meet educational demand from location-bound students. All of these alternatives are more appealing to policy makers who believe that the CCB is a radical disruption to the structure of their higher education systems and who are more supportive of the traditional structure of higher education (Ruud, Bragg & Townsend, 2010).

Previous CCB Policy Evaluations

Breaking the traditional pattern of community colleges providing general education and associate's degrees while universities offer the last two years of college requires popular and

convincing justifications by advocates for this change (Ruud, Bragg, & Towsend, 2010; Pershin, 2006). The most common one is that CCBs provide access to students who otherwise would not have the chance to earn a baccalaureate degree. Linked to this justification is the insufficient capacity of current higher education systems for serving an increasing number of students (Bemmel et al., 2009; Manias, 2007; McKinney & Morris, 2010). Scholars have argued, however, that empirical evidence fails to render these concerns realistic, even though policy makers use these aguments to gain support for this reform (Burrows, 2002; Henderson, 2014; Pershing, 2006).

Henderson (2014), for example, in investigating factors explaining the adoption of the CCB, used an event history analysis, specifically an extended Cox model, where adoption of the CCB depended on several variables representing regional diffusion, fiscal and socioeconomic factors, higher education demand, governance structures, and political factors. The analysis for this study was conducted using longitudinal panel data for 46 states from 1989 to 2007. She found that states experiencing growth in undergraduate enrollment at four-year institutions were less likely to adopt this policy. This result contradicted all previous qualitative data documenting student demand as an impetus for CCB policy and cast doubt on the longstanding "capacity" justification. Henderson also found that states with a higher concentration of four-year institutions in urban areas were likelier adopters, thus contradicting arguments that CCB policy responded to the needs of students bound to rural areas.

Manias (2007), who has evaluated the impact of community college teacher education programs in Florida on capacity and access, hints as to why the CCB literature may be inconclusive and traces the nuanced ways that this policy might affect access and capacity in adopting states. He investigated to find if the students enrolled in the CCB-level

education programs would have taken different academic or professional directions if such programs were not an option. Although his trend analysis was a simple comparison of groups and did not allow him to make any causal statements, it indicated that while a CCB policy could expand the capacity of a higher education system, there is a strong possibility that CCB policies only redistribute baccalaureate-seeking students from four-year institutions to CCBs and from some majors to other majors that become more accessible under the policy.

McKinney et al (2013) also demonstrated that the impact of the policy is not so clear-cut. This research team surveyed 37 community colleges around the nation regarding the impact of baccalaureate programs on enrollment in their colleges. The findings indicate that CCBs are serving students who are location-bound for reasons like family and jobs, rather than rural isolation.

Cost.

Another common justification for CCB authorization is the reduced cost to the state and the lower price of baccalaureate degrees provided by community colleges. Bemmel (2008) compared the cost-effectiveness of nursing and education baccalaureate programs at a Florida community college to two similar programs at a Florida university from 2003 through 2007. The study revealed that the university and community college programs were equally effective as measured by student graduation and test scores. The community college baccalaureate programs were more cost- effective: lower per-student funding and student tuition charges made the CCB less expensive for both the state and students. The university programs were initially more cost effective due to the start-up costs of CCBs, but the financial differences diminished over time. He concluded that increased growth in the enrollment of the programs combined with the implementation of effectiveness measures comparable to those of

the university would render baccalaureate programs at the community colleges more cost-effective.

Nevertheless, Bemmel (2008) also found that while CCBs received significantly less funding compared with universities, community colleges incurred a higher cost per full-time student because the average state funding for CCBs was 15 percent lower than state universities.

The arguments for less funding included the fact that the community colleges' faculty did not have research assignments in their workload, unlike state university faculty. the teaching load of baccalaureate faculty in community colleges was greater, but their average salary remained lower than their university counterparts. Bemmel cautions policy makers to consider the pros and cons of continuing lower funding levels for community college baccalaureate programs. Continuing to fund CCBs at a lower rate than comparable university degrees saves money, but it also could result in community colleges offering underfunded degrees (Bemmel, 2008).

Bottorff (2011) has assessed, measured, and evaluated costs borne by Florida colleges that have implemented baccalaureate degrees. He looked in depth at the capital costs spent on the first CCB initiatives and at the expenditures of 18 Florida CCB colleges from 2001 through 2010. He looked at the baccalaureate capital expenditures from each institution and the relationships between the direct baccalaureate appropriations and expenditures. Across the 10-year study period, all Florida CCBs reported over $120 real million dollars in baccalaureate expenditures, of which only 16.5 percent was on capital items. When adjusted for Consumer Price Iindex (CPI), $73 million was actually appropriated for CCBs during the study period—only 61 percent of the $120 million spent (Bottorff, 2011).

At the institutional level, Bottorff found similar results: each CCB spent more on the baccalaureate initiative than was reportedly appropriated for it. On average, Florida CCBs tapped their own reserves for nearly two-thirds of what was expended on the baccalaureate, with the state appropriating the final third. He concluded that the CCB is not being sustainably funded by the state, even thought the state justified the CCBs by expected economic impact. . Bottorff expressed concern that this expansion and its unbalanced sources of funding could starve critical programs and populations that are part of the traditional community college mission.

Claims about attainment.

Another justification to adopt this policy is the urgency to meet workforce demand for qualified workers. Daun-Barnett (2011) evaluated the influence of the policy on the total production of nurses in the public sector of Florida, Indiana, Louisiana, Nevada, Utah and Washington from 2000 to 2008. He tested the hypothesis that allowing community colleges the authority to confer the bachelor's of science in nursing (BSN) would increase the production of nurses in a given state beyond rates of growth in other states. Utilizing NCES data and an ordinary least squares regression model with fixed effects for states, and policy adoption as his variable of interest, he found that adoption of the community college baccalaureate in nursing was positively related to the number of total associate's and bachelor's level nurses trained at public institutions, even after controlling for size of population and poverty rate.

In a second analysis including all public and private 2– and 4-year institutions, the policy was also a significant predictor of nursing degree production. The policy was still significant when he held the effects of the state fixed while controlling for population size and poverty, though the effects were smaller. Daun-Barnett concluded that the gains made in terms

of nursing degree production were not the result of shifting students from one sector to the other but it remained unclear from where the increased nursing students in community college came. It may have been the case that they drew practicing nurses back to the classroom, or students with other vocational interests into BSN-completion programs. In either case, the bachelor's program would require different clinical preparation and thus different costs.

Daun-Barnett's (2011) findings are noteworthy as the only study measuring impact in attainment for several adopting states, comparing them with a group of non-adopters, and attempting to control by other state effects to explain changes in attainment for the nursing degree. More importantly, for first time in CCB policy literature, Daun-Barnett included ethnic composition considerations in his analysis and found that when racial composition of the state is added to the analysis, the total proportion of the population that is non-White had substantially larger effects on the model not previously anticipated. Both the African American and Hispanic population demographics are related to nursing production and the CCB policy is no longer significant. At the same time, the significance of population size and poverty rates was reduced considerably.

Daun-Barnett explained that this racial composition effect might reflect a measure of population growth given that the population size effect was reduced, and that Florida is the largest adopting state in the analysis with the longest history of the policy and a significant Latino population. He also concluded that there could be a broader capacity issue in states with higher Latino populations, and that Hispanics, who are usually over-represented at community colleges, may be more comfortable pursuing their baccalaureate degree at a community college. Finally, he warned that it is tempting to conclude from his analysis that CCB policy had no effect on the overall production of new nurses because the policy may be endogenous to the

proportion of the population that is Latino. He noted, though, that this endogenous relationship does not mean that the policy has not had an impact. On the contrary, he suggested that the policy might be a tool that governments in states with high proportions of Latinos could use to expand capacity for a specific group of students who are more likely to attend community college.

Differently to Dawn Barnett (2010) other scholars have not found positive effects of the policy. Porter, Caminole and Jaquette (2014) analyzed the effect of allowing CCBs on nursing degree production using a state-level panel dataset spanning 14 years. They analyzed the number of nursing degrees produced by public, private not-for-profit, and for-profit institutions. They found that the change of policy did have an effect on the production of different kinds of universities but the effects where not statistically significant. They concluded that the variation in treatment intensity across states with the exception of Florida might be contributing to the insignificant results. They tested the possibility that CCB policies have only had a significant effect in the state of Florida that had a wider implementation of this programs The results from the Florida Model were also not statistically significant.

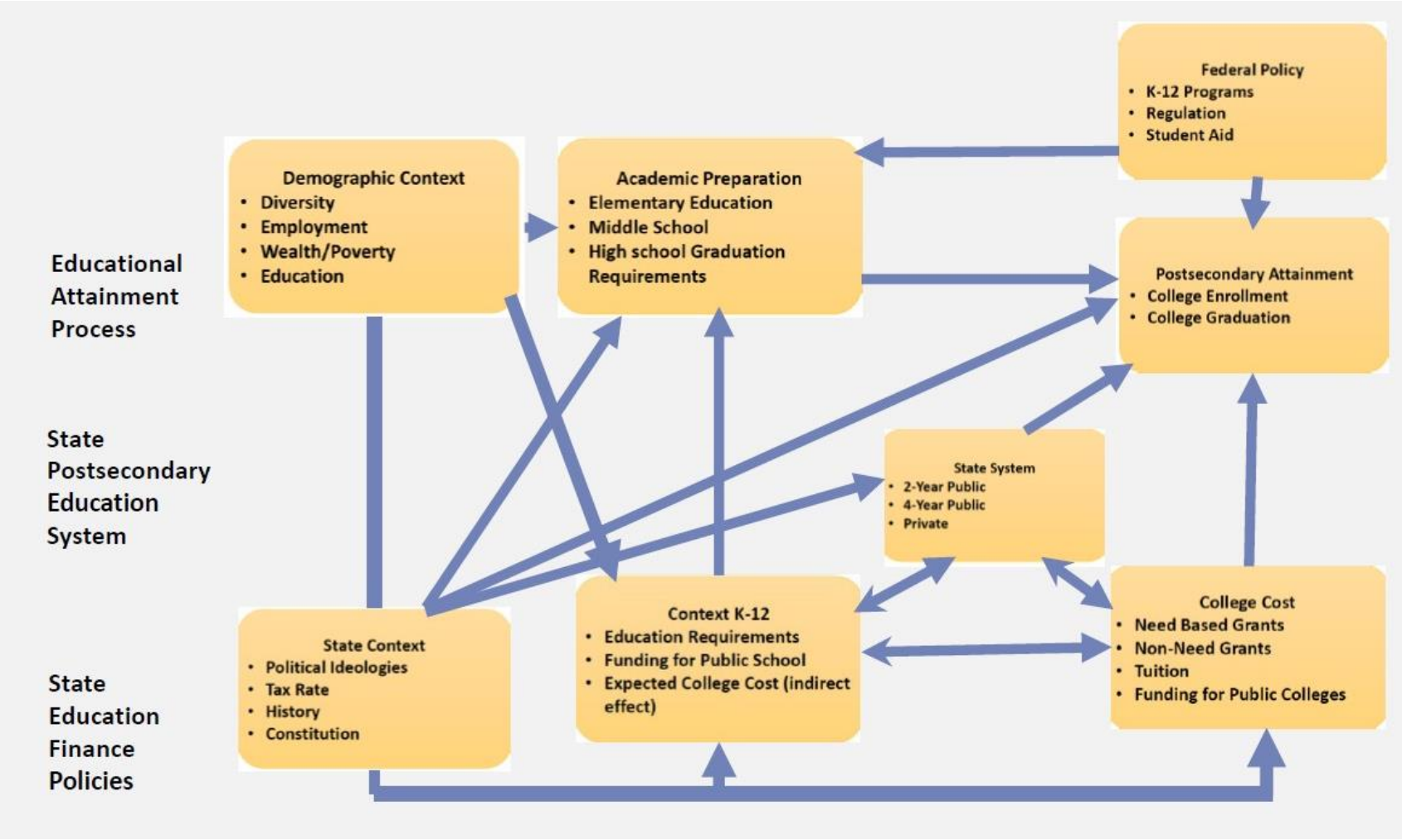
Park, Tandberg, Shim, Hu and Herrington (2016) **explored** state adoption of community college baccalaureate (CCB) teacher education programs and its effect on the number and diversity of students earning bachelor's degrees in teacher education. Overall, we find no effect of these programs. However they built on Porter et al. (2014) and constructed a control group very similar to Florida, to test only effects in this state that had a wide spread implementation of this policy and they found that resulted in a positive and significate effect on teacher education degree production. Nevertheless when they disaggregated their results by race, they found that the diversity of the graduates declined with fewer proportions of Latinos and Blacks getting

these degrees.

Framework to Model Policy Impact on Educational Outcomes

Recently, scholars responding to the need to focus on state policy have developed models that link state public policy with higher education performance and indicate the processes and factors that should be used to assess the impact of state regulation on postsecondary attainment.

Based on sociological, economic, and education theories exploring enrollment and attainment in higher education St. John, Chung, Musoba, Simmons, Wooden and Mendez (2004) proposed a framework for assessing the impact of federal and state policy on post-secondary attainment. This model recognizes that individual students have the freedom to make education choices, but that choice is limited by economic and social constraints that are difficult to control in models that test theory. The model maintains that public policy could engage and uplift the families and communities of the students through student aid commitments and policies that promote a college-going culture in the early stages of the educational path (St. John, Chung, Musoba, Simmons, Wooden and Mendez, 2004). It also suggests that policy regulating graduation requirements and academic preparation affects enrollment and attainment in higher education (St. John et al., 2004). Additionally, policies that provide support services ease financial fears and provide better orientation to college. Federal and state policies that regulate tuition and financial aid have an impact on the transition from high school to college because they affect college and major choice and influence how students find fit among diverse institutions (St. John, et al., 2004).



Source: St. John, Chung, Musoba, Simmons, Wooden and Mendez (2004)

Figure II.1 Framework for Assessing the Impact of Federal and State Policy on Secondary Education

The framework for assessing the impact of federal and state policy on post-secondary attainment, adapted from St. John et al. (2004, 2013, see Figure II.1), was originally created to understand the role of state public finances on the educational attainment pipeline. It points to specific characteristics that should be considered when analyzing state policy aimed to increase college enrollment and graduation at the state level. Similar to Perna's et al. (2014), state context has an important role in understanding college enrollment and graduation rates in a state.

Characteristics such as political ideologies, tax rates, history, and the constitution of each state could have a direct effect on education enrollment and attainment. The context could shape these indicators indirectly by affecting the academic preparation of the state population as well as the characteristics of their K-12 sector, the structure of the higher education system, and the cost of college.

St. John et al. (2013) argued that demographic context, such as ethnic composition of the state's population and the extent of wealth, poverty, and education, are required as controls for policy studies. These factors represent the state-level equivalent of variables for family income and parents' education frequently used in studies of college access using individual-level data as important factors in explaining college access, enrollment, and attainment. They can influence the academic preparation and the K-12 context of the state (St. John et al., 2004; St. John et al., 2013).

Academic preparation indicators like high school graduation rates and information about the specific courses students take in high school should be also included in models evaluating state policy because, at the individual level, they have been found to explain student success in higher education (St. John et al., 2004; St. John at al., 2013). In the case of

measuring the impact of a CCB policy, high school graduation rates could serve as a proxy for minimal academic preparation considering that most states accommodate for enrollment in two-year colleges if students receive a high school diploma (St. John et al., 2004; St. John at al., 2013).

Public finance indicators should also be included in these kind of models, as public funding is a primary mechanism that states can use to promote educational attainment, especially college attainment, among their resident populations. According to these scholars, the system of state finance influences the educational attainment pipeline through tax rates, school funding, expected tuition and grants, expected system capacity, and college prices themselves (St. John et al., 2004; St. John at al., 2013). In the K-12 context, expected college costs and funding for public schools could directly affect the academic preparation of the state population as well as college enrollment and attainment, indirectly (St. John, 2002).

At the state level, tax rates can influence both academic preparation and college attainment with their impact on the personal income of residents and the level of state funding for public, K-12, and higher education. In turn, the level of school funding can influence the high school graduation rate in a state and have a direct effect on the availability of certain high school courses (St. John et al., 2004; St. John at al., 2013).

In their higher education systems, states recognize college costs as having an impact on attainment. States finance college access through need-based and non-need-based student grants and tuition subsidies to public colleges. At a given level of educational expenditures by public colleges, state subsidies to public colleges reduce tuition prices charged to college students.

Other important aspects in models assessing the impact of state policy should be the composition of a state postsecondary education system and its capacity. States with large two-year college systems and private colleges can expand access. Thus controlling for the structure of state systems of higher education is vital.

As measures of post-secondary attainment, the model suggested by St. John et al. (2013) uses college enrollment rates for high school graduates as one measure of educational attainment. They assume that measures of college graduation or other persistence indicators would provide useful information about the efficacy of state intervention in postsecondary education. The following indicators reflect an impact of public finance on college attainment: enrollment rates for high school graduates; and college graduation rates within seven years by first-time students in two-year colleges. These factors can be broken down into public, private, and proprietary colleges within states.

This research uses St. John's model to guide the analytical procedure taken to evaluate the effect of CCB policy. This framework indicates that equity of educational outcomes among different population groups should be an important consideration when evaluating a state policy and highlights the importance of disaggregating data in a way that these outcomes are at the forefront of the analysis. Table A.2 in the appendix presents a detailed summary of the variables selected to represent these constructs.

Hypotheses

The conceptual framework outlined previously informs the following hypotheses related to the research question guiding this study:

H1: A CCB policy change will have a positive effect in the graduation rates for all students

H2: A CCB policy change will have a positive effect in the graduation rates of Latinos

H3: A CCB policy change will increase the overall undergraduate enrollment in these states

H4: A CCB policy change will have a positive impact in the enrollment of Latinos in the state's public universities and colleges

Summary of the Literature and Conceptual Framework

The conceptual framework identified the main rationales that may be guiding regulators to change higher education state policy allowing community colleges to provide baccalaureate degrees. It used political and economic science theories to conceptualize the policy as a deregulation and to identify the assumptions behind each rationale and points out some inconsistencies of the rationales that may produce unintended policy consequences with special focus on equity considerations. It also presented some of the alternatives taken to achieve similar objectives in those states that have not implemented a CCB policy. Finally, it introduced the higher education assessment model that links state policy with educational outcomes in higher education and guided the selection of the variables tested in the statistical models presented in the next chapter.

CHAPTER III

Methods

Analytical Strategy

This study used panel data and a difference in differences approach with a fixed effects model to parse the effects of the CCB policy on enrollment and graduation rates in states adopting it. Estimating the effects on college outcomes of a state policy that allows CCBs can be difficult because adoption of a CCB policy is not a randomly assigned treatment. States select different educational policies depending on their history, ideology, political preferences, and other unique characteristics (Perna et al., 2014). Simply comparing outcomes between states that adopt a CCB policy and those that do not is likely to produce biased estimates because the decision to adopt a CCB policy can be influenced by unobserved differences between states (St. John et al., 2013). Additionally, a state's unique characteristics may influence educational policy and the states' graduation rates and enrollment patterns (St. John et al., 2013). Comparisons between different states are of limited validity because states are inherently heterogeneous (St. John et al., 2013). Failure to account for these differences would likely result in biased estimates of the effects of adopting a CCB policy on student outcomes.

Quasi-experimental approaches and the use of panel data, which observes the same subjects over time (Frees, 2004), can permit relatively strong inferences about causes and effects without having full experimental control and are often utilized to assess social policy (Singleton & Strains, 2004). By tracking subjects over time, one can model subject behavior

because observations from the same subject tend to be similar. Heterogeneity can be modeled by examining the sources of correlations among repeated observations of a subject (Frees, 2004; Singleton & Strains, 2004). Utilizing panel data yields dynamic patterns in observations, and because the observation shares a common, yet unobserved, subject-specific parameter that induces a positive correlation (Frees, 2004).

Social researchers also use panel data to deal with their inability to randomly assign subjects to specific treated and untreated groups (Singleton & Strains, 2004). Multiple observations of the same subject over time allows the researcher to detect the behavior of a subject before and after an "interruption" or an "intervention" (Singleton & Strains, 2004). This is possible when periodic measurements of an effect of interest are available (Singleton & Strains, 2004), such as the case involving measurable student outcomes in this project.

My identification strategy uses variation over time in CCB policy in the states examined to estimate the effects of this policy change on student outcomes. The difference in student outcomes in nineteen states[1] before and after implementation of CCB programs is compared with the student outcomes over the same period in states that did not change their policy. The result is essentially a multi-period difference-in-difference (D-D) analysis.

The difference in difference (D-D) method has been utilized extensively to study the effect of statewide education policies on educational outcomes (DesJardins & Flaster, 2013). This method aims to control for unobserved or omitted factors that may confound the relationship between the treatment and outcome of interest (Angrist & Pischke, 2009). Estimating a state-specific and fixed-effects model aims to account for differences between

[1] To date twenty-two state allow CCBs, but three states are not included because data were not available during the analytical period of this study.

states and for changes that occur over time. I also include time-specific effects that function as controls for unobserved factors that may similarly affect all states, such as educational policies at the federal level or macroeconomic circumstances, such as period of recession or economic growth. Then, I use event study techniques to identify preexisting trends that may affect the dependent variables before and after adoption of a CCB policy and measure the yearly effect of the policy after adoption.

The common trend assumption of Fixed Effects models.

The key assumption of difference-in-difference estimators is that trends in the outcome would have been the same in the control and treated group, even in the absence of the treatment (Pischke, 2005). Typically, the assumption is tested with a graphical visual inspection of the pretreatment trends for the control and treatment groups (Pischke, 2005). The trend analysis in the appendix (see Appendix B.1 to B.18) details this initial examination. Nevertheless, in a model with multiple treatment groups (states) and multiple periods such as this one, it is difficult to rely on only a graphical assessment for the evolution of state-specific trends in the pretreatment period (Pischke, 2005). This issue especially complicates this analysis CCB phenomenon because states changed policies to allow CCBs in different years.

Also suitable for multivalued treatments or several groups is the method of creating dummy variables that test a parallel trend in the outcome (McFarlin, Martorel and McCall, 2017; Pischke, 2005; Wolfers, 2006). Thus, using event study tools, I included a group of parallel trend-testing dummies. If the outcome trends between treatment and control groups are the same, then these variables should be insignificant. In other words, the D-D is not significant between the two groups in the pretreatment period (McFarlin et al., 2017; Pischke, 2005; Wolfers, 2006). If there are systematic trends in the outcomes leading up to the time of a

CCB policy, the dummy variables will exhibit these trends (McFarlin, et al., 2017; Wolfers, 2006). If there is no such evidence of trends that affect the graduation or enrollment rates before the CCB policy, then differential trends are not driving the outcomes after CCB adoption (McFarlin et al., 2017).

Difference in Differences-Fixed Effects Models.

In the first part of my analysis, I examine the effects on average student enrollment in four-year, public institutions in states that have institutionalized CCB policy. Equation 1 specifies a general model of enrollment where *Yit* represents the state's average enrollment of students in four-year institutions (either for all students in public, four-year institutions or for Latinos enrolled in public, four-year institutions). In the equation, *i* represents the state; *t* represents time; *CCBit* represents the participation of a state in a CCB policy; HE*it* represents higher education variables related to college cost; HS_{it} represents prior preparation of the student population entering college and how the state financed this prior preparation; *SDit* is the block of state time and varying covariates that represent a sociodemographic; αi is a state-level fixed effect; γt is a year-level fixed effectand εit is the error term:

$$Yit = \mu_0 + \beta CCBit + \gamma HEit + \delta HSit + \theta SD_{it} + \alpha i + \gamma t + \varepsilon it \qquad (1)$$

The main coefficient of interest in Equation 1 is β, which represents the change in the average enrollment in public, four-year institutions in response to the state's participation in a CCB policy. Robust standard errors clustered at state level are estimated for all regression models.

Equation 1.a specifies the event study analysis. In this version of the model, I do not include the dummy variable representing the participation of the state in a CCB policy. Instead, I include *IPRE* and *qPOST* that represents the dummy trend variables in the years before and

after CCB adoption for each state.

$$Y_{it} = \mu_0 + \gamma HE_{it} + \delta HS_{it} + \theta SD_{it} + \alpha_i + \gamma_t + IPRE_{t-5} + \varphi POST_{t+5} + \varepsilon_{it} \quad (1a)$$

In the second part of my analysis, I use Equation 2 to examine whether differences in state graduation rates existed before and after states allowed CCBs. Equation 2 specifies a general model of state graduation rates where *Yit* is the average graduation rate of the state (either for all students in public, four-year institutions, or specifically for Latinos enrolled in public, four-year institutions), where the state is represented by *i* and time by *t*. *CCBit* represents the participation of a state in a CCB policy; HE*it* represents a set of higher education variables that are related to college cost and investment; HS_{it} represents prior preparation of the student population entering college and the manner in which state governments finance this prior preparation; *SD* represent varying covariates which include socio-demographic factors; αi is a state-level fixed effect; γt is a year-level fixed effect. Finally, εit is the error term:

$$Yit = \mu_0 + \beta CCBit + \gamma HEit + \delta HSit + \theta SD_{it} + \alpha i + \gamma t + \varepsilon it \quad (2)$$

The main coefficient of interest in Equation 1 is β, which represents the change in the average graduation rate of the state in response to its participation in a CCB policy. Robust standard errors clustered at the state level are estimated for all regression models. The goal is to test for differences in the effect of a CCB policy on graduation rates for students of all races and for Latino students specifically.

Equation 2.a specifies the event study analysis. In this version of the model, I do not include the dummy variable representing the participation of the state in a CCB policy. Instead, I include *IPRE* and *qPOST* that represents the dummy trend variables in the years before and after CCB adoption for each state.

$$Y_{it} = \mu_0 + \gamma HE_{it} + \delta HS_{it} + \theta SD_{it} + \alpha_i + \gamma_t + IPRE_{t-5} + \varphi POST_{t+5} + \varepsilon_{it}$$

I estimated separate models for Latinos because there has been uneven progress in the representation of Latinos in public higher education (St. John & Musoba, 2011, Excelencia in Education, 2017). Figure I.1 shows the level of underrepresentation of Latinos in 1991 and 2013. A primary impetus for this study was to utilize disaggregated data to investigate if CCB policy is actually ameliorating inequity in higher education outcomes for these groups.

Data

I used state-level data from different databases for my analysis. The primary source of higher education data is the Integrated Postsecondary Education Data System (IPEDS) survey administered annually by the National Center for Education Statistics (NCES). IPEDS data includes institutional characteristics, student enrollment and completion, tuition, finances, and staffing. IPEDS data have been collected by the NCES since 1987 (Fuller, 2011), and the reauthorization of the Higher Education Act in 1992 made the completion of IPEDS survey components mandatory for all postsecondary institutions receiving federal funding for Title IV student financial aid programs (Fuller, 2011).

IPEDS data can be used for measures such as the total undergraduate enrollments per state per year and the average graduation rate by state and year, among other things (Jaquette & Parra, 2014). I collapsed IPEDS's institutional-level data at the state level by utilizing the Delta Cost Project IPEDS Database (2016) and Jaquette-Parra HEGIS-IPEDS (2017). These are both longitudinal databases that include institutional data on postsecondary finances, enrollment, staffing, completions, and student financial aid for academic years from 1986-87 through 2013-14 (DCP, 2011; Jaquette-Parra, 2014). The majority of the data in both databases are from the nine different surveys conducted by IPEDS: institutional characteristics, fall enrollment, finance, student financial aid, graduation rates, completions,

twelve-month enrollment, staffing, and salaries. Both databases have been designed to overcome, as best as possible, differences in reporting standards that occurred between 1987 and 2013 (DCP, 2011; Jaquette-Parra, 2014).

One of the main differences between the Delta Cost Project and the Jaquette-Parra HEGIS-IPEDS is how they each handle institutional groupings related to parent/child reporting in IPEDS (Jaquette-Parra, 2014). IPEDS reporting guidelines allow some institutions ("parents") to report data for branch campuses or other affiliated institutions ("children"). Parent institutions may have one or more children, and the children may differ over time and/or by survey (DCP, 2011). Because of the longitudinal nature of both databases, grouping parent and child institutions under one identifier becomes a challenge. The debate about which method constitutes the best collapsing solution it is far from settled (Jaquette, 2016). This debate, however, does not represent an issue for a state analysis. The DCP and the Jaquette Parra databases can be used because collapsing is not a problem when analyzing at the state level (Jaquette & Parra, 2014). When creating state-level measures from IPEDS data, it does not matter whether observations for public institutions represent one campus or all campuses in a state because the aggregate state numbers will be the same (Jaquette & Parra, 2014).

The process for creating annual, state-level measures using the DCP and the Jaquette-Parra databases requires two steps: first, sorting the data by state and year; and second, creating a new variable that collapses the sums or averages from all institutional values into one value for each state and year included in the analysis. I employed the Jaquette-Parra HEGIS-IPEDS database (2017) to obtain graduation rates because the Delta Cost database does not disaggregate this variable by race or ethnicity. The control variables for this

study, which include enrollment, tuition, and appropriations measures, were obtained from the Delta Cost Project database (2016).

I obtained information on the states that have implemented CCB policies and the year they adopted the policy from the publications of the Community College Baccalaureate Association (CCBA, 2017) as well as the Office of Community College Research and Leadership reports (Bragg, et al. 2009; Townsend et al, 2008). I also obtained information from the Petrosian (2010) dissertation.

Table III.1: States that have changed to adopt a CCB policy

State	Abb.	Year of Adoption	Number of CCB	State	Abb.	Year of Adoption	Number of CCB
Arkansas	AR	1997	1	New York	NY	1993	2
California	CA	2014	15	North Dakota	ND	2006	1
Colorado	CO	2010	1	Ohio	OH	1996	2
Florida	FL	2001	24	Oklahoma	OK	2007	2
Georgia	GA	1998	3	Texas	TX	2003	3
Hawaii	HI	2004	1	Utah	UT	1993	2
Idaho	ID	2003	0	Vermont	VT	1993	1
Indiana	IN	2004	1	Washington	WA	2005	17
Louisiana	LA	2001	1	West Virginia	WV	1993	1
Michigan	MI	2015	3	Wisconsin	WI	2011	2
Nevada	NV	1999	3				
New Mexico	NM	2004	2	**Total**		**22 States**	**88 CCBs**

*Note: Some states allow community colleges to offer baccalaureate degrees they deem appropriate, and some states allow community colleges to offer only stipulated degrees

To account for other state characteristics such as academic preparation, socio-demographic characteristics, and the political and ideological tendencies of state populations, I used data from the National Center for Education Statistics, the U.S. Census Bureau

(CENSUS), the Bureau of Labor Statistics (BLS), the Educational Testing Service (ETS) and the Barry data from the Inter-university Consortium for Political and Social Research (Barry et al, 1998; Berry et al. 2010, Kremer, 2014). The census provided data on the race/ethnic composition of each state, the BLS on unemployment and income, the NCES on academic preparation indicators, the ETS on SAT data, and the Barry reports on political and ideological characteristics.

Analytic Period and Sample.

The analytic period for this study, from 1990 to 2014, was determined by the establishment of CCB policies in states, a trend that surged in the 1990s (See Table II.1). The unit of analysis is each state. The availability of the dependent variables and independent variables of interest determine the sample used in each model. For example, IPEDS enrollment data were available from 1991 to 2013, but data on the graduation rate were not available until 1997.

The analytic sample is limited to public higher education institutions because these colleges and universities are affected more by state public policy changes than private institutions. Daun-Barnett (2011) found no evidence that CCBs had any significant impact on the enrollment or graduation rates of private institutions. In addition, one of the main objectives of this project is to evaluate whether there is any improvement in the equity of educational outcomes as a result of this CCB policy. Again, public institutions enroll approximately 70 percent of all undergraduate students (National Center for Education Statistics, 2014).

Variables.

Table A.2 in the appendix contains a list of all variables, variable definitions, and sources used in this study. All monetary variables were adjusted to constant dollars using the 2014 Consumer Price Index. All dependent and independent variables (excluding proportions) were transformed by using the natural logarithm. This standardization is useful for two reasons: it allows comparison of variables to be expressed in widely different units and it reduces skewness of a variable to a distribution that is nearly symmetric, which often makes the information easier to handle and interpret. Another benefit of the log transformation is that it allows for the interpretation of the coefficients to be used as an elasticity measurement (e.g., a percentage change in the dependent variable is associated with a percentage change in the independent variable).

Since the data were composed of an aggregation from institutional data to state data, few cases of missing data existed. The information on enrollment was missing in 1990; several of the states were also missing information in 2013. Graduation rates were missing from 1990 to 1997 and for 2014.

All data variables included in the models were evaluated for outliers. There were very few, but clear outliers were replaced with the value averaging the previous and successive year.

Dependent variables.

To conduct a comprehensive analysis of the impact of a CCB policy on student outcomes, I examine two dependent variables in my empirical analysis: graduation and enrollment rates of undergraduate students of all races, and for Latinos. The six-year

graduation rate measures college success, and enrollment represents college access (Daun-Barnett, 2008; Wiederspan 2015). Past studies that tried to assess whether state policies relate to measurable student outcomes in higher education have defined their dependent variables in terms of six-year graduation rates. This rate, which is the percentile of first-time, full-time students who graduate within six years of matriculation at the same institution, frequently provides the most prominent student performance indicator (Rutherford & Rabovsky, 2014). Enrollment is calculated as the total number of undergraduate students enrolled full-time or part-time in credited programs at public, four-year institutions. Besides representing different outcomes, six-year graduation and enrollment rates both could be affected by the variables included in the model. They could also have a loop of causality between them, which is why they are endogenous to the same system. For this reason, I explore them with different models. Separating the analysis of all students and Latinos is important because there is a substantial underrepresentation of Latinos in public four-year colleges (St. John & Musoba 2011) Figure I.1 demonstrates how this underrepresentation of Latinos persists in most states. Analyzing how specific state policies such as the CCB impact Latino enrollment in four-year colleges and universities can provide insight into the causes of access inequalities and solutions to mitigate them (St.John and Musoba, 2011).

Explanatory variables.

The primary explanatory variable of interest for my research question is the participation of a state in a community college baccalaureate policy. For states that have never adopted a CCB policy, the dummy variable has a value of zero during all the years within the analytical period.

For states that allowed CCBs, the dummy variable is zero for all the years the state did not have a CCB policy and one for all the years it has. For states that allowed CCB before 1990, such as New York, the dummy variable will have a value of one for all years in the analytic period. For states that adopted a CCB policy after the analytical period of this research (2014), such as California and Michigan, the dichotomous variable takes the value of zero for all years sampled. I assume that once a community college starts providing baccalaureate programs, it continues providing them. No state that has established a CCB policy has ever rescinded the policy.

As described in Equations 1 and 2, I control for a number of additional time-varying covariates that could affect graduation rate and enrollment. College cost, financial aid, and students' pre-college preparation are closely linked to access, diversity, and educational attainment in higher education (St. John & Musoba, 2011, Perna & Kurban, 2013). Cost in relation to available financial aid has substantial influence on whether students can enroll and persist in college (St. John & Musoba, 2011; St. John et al. 2013). Ability to pay for tuition and costs has been found to be positively related to students' retention and graduation rates (Hossler, Dundar, and Duglas T.Shapiro, 2013).

I control for the cost of higher education, which includes state average tuition and fees of public, four-year and two-year institutions. Costs could potentially affect enrollment and graduation rates (Rutherford and Rabovsky, 2014). But tuition and fees are a source of income for institutions, allowing them to provide better services to students and improve the quality of education (Hossler, Dundar, and Duglas T.Shapiro, 2013), and this can positively affect enrollment and graduation rates.

Coordinated state financial aid policies can improve access and opportunity for enrollment in four-year public institutions and persistence and degree attainment for students (St. John & Musoba, 2014). I control for state aid that is targeted to scholarships and fellowships, offsetting the cost of higher education and thereby having a positive effect on enrollment and graduation rates (Daun-Barnet 2008).

State appropriations for higher education institutions could also offset the cost of education for students and impact their ability to pay. When higher education appropriations diminish, colleges and universities try increase tuition and fees. But researchers have found that some institutions react to changes in state appropriations by changing the way they operate and cutting expenses in instructional services (Frye, 2015), reducing the amount of personnel (NEIU, 2017), and shortening the school year by several days (NEIU, 2017). These changes can ultimately affect enrollment and graduation rates. Thus, I control for per-capita state appropriations to higher education.

K-12 state education policies can have an indirect effect on college enrollment and attainment through improved preparation for students (St. John & Musoba, 2011). Completion of high school is the minimum requirement to enter college and is now widely defined as including a college preparatory curriculum (St. John & Musoba 2011). Therefore, I control for high school survival rate, the number of students who graduate four years after they enter high school.

State appropriations to the K-12 system represent the investment a state has made over the years to support college preparation. Prior preparation has been identified as an important factor in enrollment and success in college (St. John et al., 2013).

I also control for the percentage of students who took SAT exams, because this is an

indicator of preparation for college. It also reflects policies adopted by states that push for college entrance as the primary outcome of high school (St. John & Musoba, 2011).

I include in this study socioeconomic variables such as per capita income, unemployment, state population, and ethnicity. A state's economic health can influence both its enrollment and graduation rate. When unemployment is high, people tend to seek higher education in hopes of developing skills or facilitating a career change. Family income will also influence a student's ability to pay for college and ultimately affect the graduation rate. A population increase of a certain ethnic group can drive an increase in a state's enrollment of students from that group.

Limitations

The dichotomous variable that indicates the adoption of the CCB policy in a specific state treats this policy as a change that affects all of its community colleges. However, this is not the case for all adopting states. In some states, legislation allows only certain community colleges to offer bachelor's degrees. Some legislation also specifies which majors can get CCBs. In states like Florida, permission to offer a bachelor's degree has been extended over a period of time to more community colleges and to different majors. In other states, such as Hawaii and California, legislation allows CCBs for all community colleges. It is possible, therefore, that a dummy variable that turns on when the adoption occurs does not accurately represent the "reach" of the policy. Although useful to mark the intervention and create before-and-after testing conditions, this dummy may underestimate the effectiveness of the policy if all community colleges in the state do not have the opportunity to implement these programs.

Six-year graduation rates may exclude transfer students and part-time students. Some students who are place-bounded for a job or have familial commitments that hinder flexibility

in their studies enroll on a part-time basis. Some students enrolling in CCB programs do so with an associate's degree in the same field and are returning to school to advance their careers. Some students are transferring to these four-year programs from other community colleges or from associate programs already covered by CCB policy. These transfer students are not counted as positive outcomes.

The models in this project may not properly represent the two-year college system's impact on enrollment and graduation rates at the baccalaureate level. Because of the endogenous nature of the variables, enrollment in two-year colleges was excluded from both graduation and enrollment models. In a sense, the models assume that there is only one path to four-year colleges, by which high school students go directly to four-year colleges (St. John & Musoba, 2011). Considering the large percentage of students entering higher education in community colleges, this simplification might be restraining our understating of the effects of the CCB.

CHAPTER IV

Results

The central objective of this study was to estimate the state-level effect of a CCB policy change on undergraduate enrollment and graduation rates at public four-year institutions, with particular attention to possible differential effects for Latino students. To accomplish this goal, I analyzed descriptive statistics and trends in six-year graduation rates and enrollment as well as in other explanatory variables during the sample period, 1990 to 2014, contrasting states that did and did not make this policy shift. I then estimated fixed-effects linear regression models to examine the relationship between the change in policy and enrollment and graduation rates in public four-year institutions.

Trend Analysis Results

The descriptive analysis aims to explore the context that CCB adopter and non-adopter states experienced during the 24 years of the analytical period and assess its relationship to their positions on a CCB policy. Table IV.1 represents the means for key variables in the data set, averaged over the subset of no missing responses for each variable. Means are presented separately for states that allowed community colleges to confer their baccalaureate degrees and those that did not by 2014. The table includes t-test statistics for the null hypothesis indicating that the means are equal in the two groups. A trend analysis of the explanatory variables helps to illuminate how dependent and independent variables changed over the sample period.

Table IV.1 Means of Key Variables

True Values	Never Adopted	Adopted at any point of time	t
Six-year Graduation Rate for Students in Four-Year Public (All Races)	0.478	0.414	10.74
	-0.004	-0.004	
Six-year graduation rate for Latinos in Four-Year Public	0.402	0.358	6.329
	-0.005	-0.004	
% Enrolled in Four-Year Public	42%	50%	-9.6
	-0.152	-0.136	
% Enrolled in Two-Year Public	35%	32%	3.645
	-0.145	-0.146	
% Enrolled in Two-Year Private	0.46%	0.34%	4.4
	-0.005	-0.004	
% Enrolled in Four-Year Private	18.20%	14.40%	6.163
	-0.124	-0.087	
% Enrolled in For Profit	4%	4%	0.929
	-0.064	-0.038	
% Latino Enrollment in Public Four-Year	3.70%	8.40%	-9.59
	-0.001	-0.004	
% Latino Enrollment in Public Two-Year	4.40%	7.50%	-6.93
	-0.002	-0.004	
Per FTE HE State Appropriations	5959.436	6096.948	-0.993
	-2696.71	-2095.3	
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	2662.318	2224.041	7.426
	-1050.37	-968.664	
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	5608.9	4572.446	8.109
	-2288.16	-2134.743	
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	13331.22	11967.25	5.28
	-4707.56	-4237.444	
Per FTE State and Local Grants for Fellowships and Scholarships	372.377	348.15	1.352
	-346.278	-273.844	

True Values	Never Adopted	Adopted at any point of time	t
High School Survival Rate	73.496	71.845	3.203
	-8.464	-9.253	
Percentage of High School Students who took SAT test	41.131	32.199	5.503
	-30.784	-25.436	
SAT Scores Critical Reading	501.96	501.96	0
	-3.674	-3.674	
SAT Scores Math Total	511.52	511.52	0
	-5.739	-5.739	
Per capita Expenditures for K-12 Education (Real 2014 Values)	1671.049	1565.406	5.029
	-429.711	-293.737	
Unemployment Rate	5.633	5.758	-1.178
	-1.833	-1.89	
Median Income (Real 2014 Values)	55230.19	53359.15	3.887
	-9243.14	-7766.44	
% Latino Population	0.059	0.108	-9.268
	-0.0557	-0.116	
% White Population	0.784	0.728	6.439
	-0.112	-0.181	
% Black Population	0.11	0.088	4.2
	-0.101	-0.0836	
% Native American	0.017	0.015	1.225
	-0.033	-0.023	
% Asian (old definition)	0.023	0.05	-5.951
	-0.017	-0.108	
Citizen Ideology Index	50.322	49.919	0.46
	-15.076	-15.159	
Government Ideology Index	50.309	48.053	1.414
	-27.087	-27.953	

*Test of equality of means among adopter states and non-adopters. Standard errors are given in parenthesis.

True Values	Never Adopted	Adopted at any point of time	t
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Per FTE State and Local Grants for Fellowships and Scholarships	372.377	348.15	1.352
	-346.278	-273.844	

Similar Economic and Ideological Contexts for Adopter and Non-Adopter States.

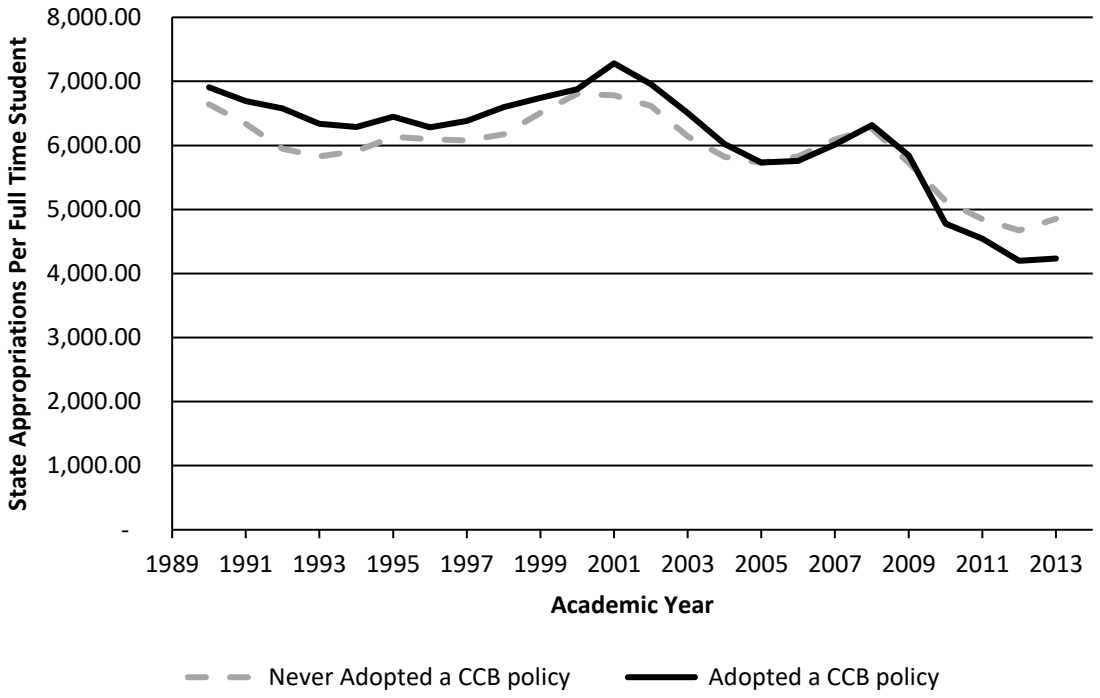
On average the educational systems of both groups experienced similar economic and ideological conditions during the analytical period. Both groups had almost identical trends in measurements commonly used to represent economic conditions. Unemployment rates for adopter states and non-adopters are extremely similar in their level and progression. Both groups experienced improvements in their economic conditions from 1990 to 2001, when the unemployment rate reached its lowest level during the study period. Then, both groups experienced a stagnation cycle from 2007 to 2011 due to the Great Recession and recuperated slowly following that period (see Appendix B.5).

Although the groups differed slightly in their aggregate average income level, their economies all expanded and then stagnated during the 14-year study period. As a result, governments and families in both groups of states had fewer resources to support education, especially when the Great Recession arrived in 2007.

Likewise, adopters and non-adopter states faced similar ideological conditions. The groups do not show any difference on indexes of either governmental or citizenship indicators of ideology (Table IV.1). For both groups the trends in ideology indicators over time are almost identical (see appendix Figures B.7 and B.8). In both groups, the ideological framework governing higher education shifted to a market logic under which individuals' education is thought to be primarily a matter of individual rights and market competition (McLendon, Deaton, & Hearn, 2007; St. John et al., 2013). This framework is associated with a preference for less state government spending and public subsidy for education (St. John, et al., 2013). Under this ideology the role of the government in providing public services has been heavily criticized, using arguments about lack of government performance, responsiveness, and accountability

(McLendon et al., 2007, St. John, et al., 2013). Thus, governments and public institutions experienced accountability pressures over results and expenditures.

Both economic and ideological conditions have played a role in how the governments of both groups of states determine the levels and types of public financial resources to invest in postsecondary education, provide oversight and accountability for the performance of campuses, and promote policies that affect the configuration of the educational system (McLendon & Perna, 2014; St. John et al., 2013, Perna & Finney, 2014). Both adopting states and non-adopter states suffered a huge decline in appropriations per full-time student (Figure IV.1). In 1990, the states surveyed invested around $7,000 per full-time student in higher education. By 2013, states only invested around $4,000 per full-time student, a decline of approximately 40%.



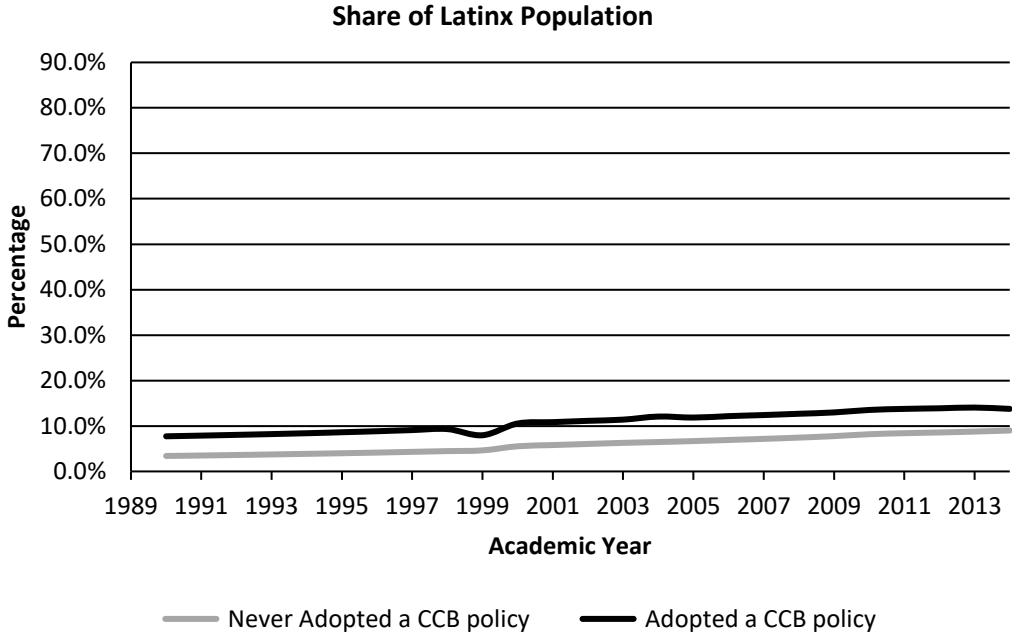
Source: calculated from Delta Cost Project IPEDS Database (2016)

Figure IV.1. Mean State Appropriations for Higher Education per Full-Time Students for Adopting and Non-Adopting States, 1990-2013 (2014 Dollars)

This clear decline in state appropriations supports scholars' claims that higher education systems may be under pressure to look for more affordable ways to fund economic pathways as they expand access. In addition, the current economic and political environment has created an urgency to improve economic conditions. This has placed added pressure on postsecondary systems to produce graduates at a higher rate in order to increase the educated workforce and foster the numerous social returns attached to education (Ma et al. 2016; Combs, 2014; Conner & Rabovsky, 2011). In this climate, educational institutions throughout the U.S have strong incentives to enter into new markets and increase enrollments and revenue, especially at the baccalaureate level, to meet economic and accountability pressures.

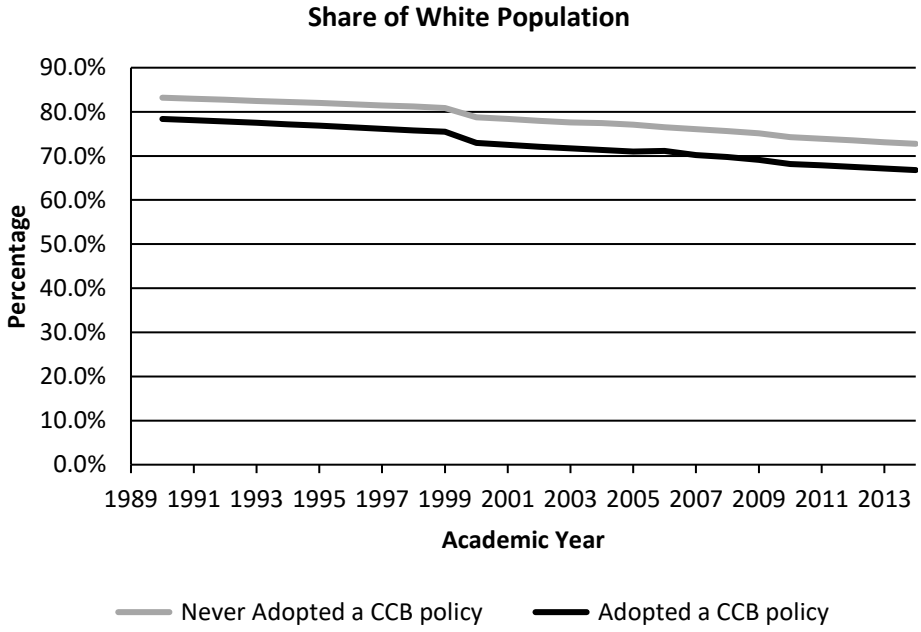
Demographic and educational outcome differences.

Demographically, however, the groups are different in the average composition of their populations. Table IV.1 shows that non-adopter states have a higher percentage of White population while adopters have a higher percentage of Latinos. Because of this, they face different demographic pressures. Figures IV.2 and IV.3 shows that while the percentage of Whites has diminished over the time and the proportion of Latinos is growing in both groups, the difference in population composition between the groups has remained constant. Because of this, adopter states face more pressure to accommodate higher number of Latinos in their educational systems.



Source: U.S. Census Bureau.

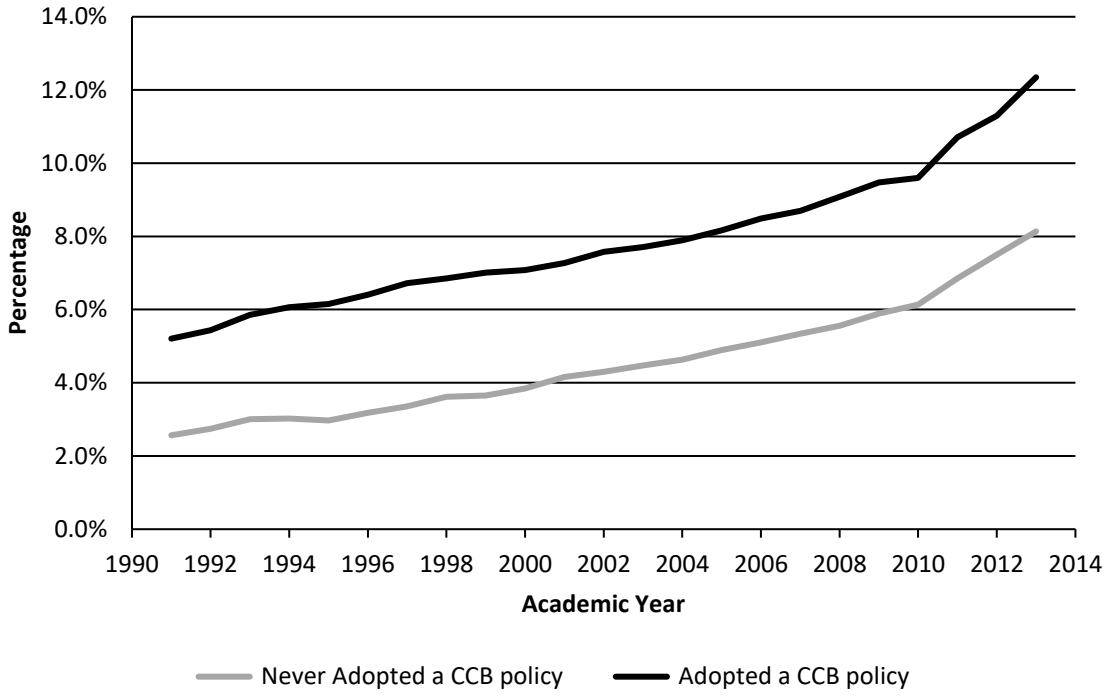
Figure IV.2. Share of Latino and White Population by Adopting and Non-adopting States, 1990-2014



Source: U.S. Census Bureau

Figure IV.3 Share of White Population by Adopting and Non-adopting States, 1990-2014

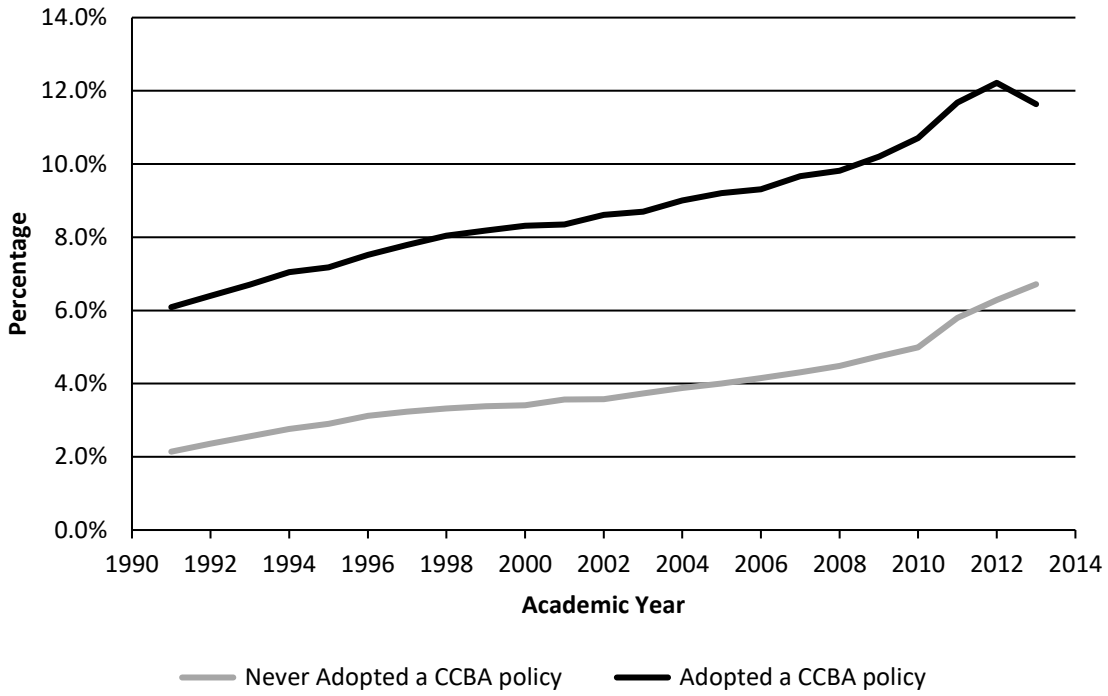
As shown in Table IV.1, adopter states have a higher number of Latinos enrolled in their public two-year and four-year institutions than is the case in non-adopter states. Latino enrollment in community colleges in adopter states represents 7.5 percent of all undergrads, while in non-adopters it represents only 4.4 percent (See Table IV.1).



Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure IV.4. Share of Latino Undergraduate Enrollment in Public Two-Year Institutions for Adopting and Non-adopting States, 1991-2012

Latinos represent 8.4 percent of all undergraduate enrollment in four-year public institutions at adopter states, more than double the 3.7% Latino enrollment in non-adopting states.



Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure IV.5. Share of Latino Undergraduate Enrollment in Public Four-Year Institutions for Adopting and Non-adopting States, 1991-2012

Figure IV.4 and Figure IV.5 show how the gap in Latino enrollment among adopters and non-adopters did not improve because both groups displayed an upward trajectory over the time period of the study, and the slope of the adopter states trend is slightly larger. In 1991, Latinos represented 6.1 percent of undergraduate students enrolled in public four-year intuitions in adopter states, while Latinos embodied only 2.1 percent of undergraduate students in non-adopting states. By 2012, Latinos represented 12.2 percent of the undergraduate students in public four-year institutions while only 6.3 percent in non-adopter states.

These results mean that community colleges in adopting states have the strongest incentives to appeal to this Latino emerging market and offer baccalaureate degrees. Likewise, community colleges in these states have higher incentives to appeal to Latino voters by providing

increased access to higher education through CCBs. At the same time, adopting states have a greater responsibility for mending the inequity in higher education outcomes between Latinos and other demographic groups so they can improve the social mobility and economic growth of their Latino population and promote an expansion in their economies.

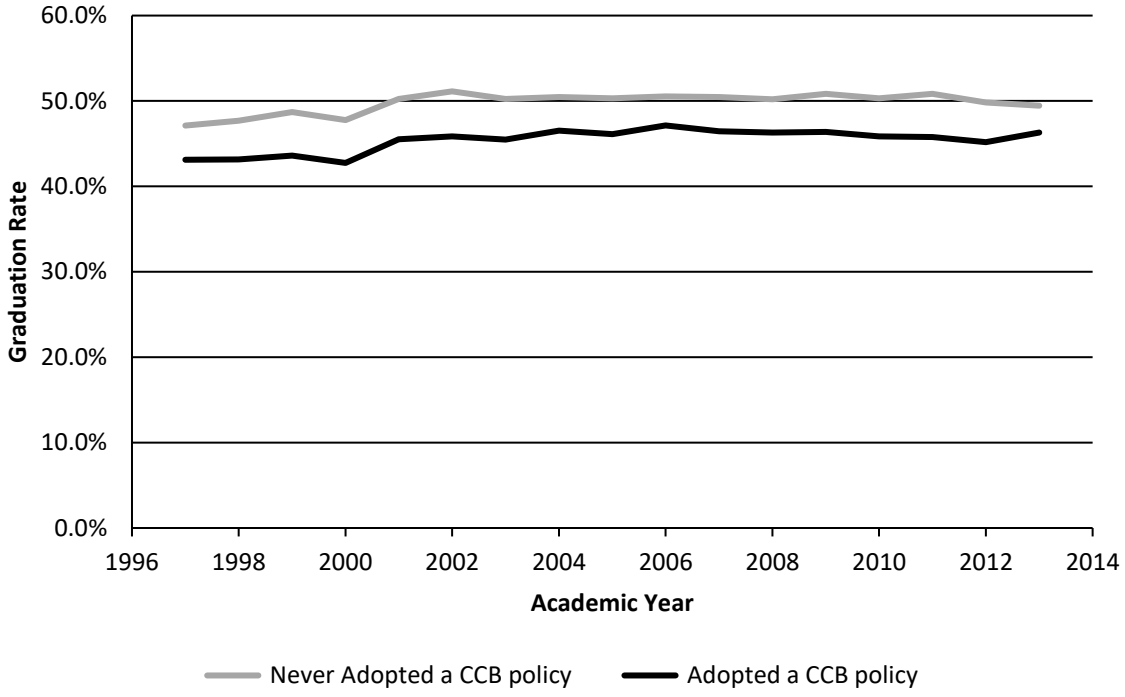
This ameliorating task may not be easy for adopting states because pre-college academic preparation of their population as well as their government's investment in K-12 education lags behind non-adopting states. Non-adopter states graduate 2 percent more high school students than those states that have implemented a CCB policy (see Table IV.1) and around 41 percent of high school students take the SAT in non-adopter states compared to only 32 percent in adopter states. Over time, these differences have not changed either (see appendix B.12 and B.13).

In addition, non-adopter states spend around $100 in real dollars more per capita in K-12 education than those states that allow community colleges to provide their own baccalaureate degrees (Table IV.1). The trend of K-12 expenditures per capita shows how this gap has widened since 2005 (see appendix B.14). This is especially concerning because since college academic attainment is contingent on previous processes in the educational pipeline (St. John et al., 2013; Perna et al., 2014), these differences in academic preparation and level of funding for pre-college education may explain some of the differences in six-year graduation rate between these two groups. It could also contribute to maintaining the inequity of academic outcomes of the Latino population in these states.

Graduation Rate Differences.

On average during this 20-year period, public four-year institutions of both state groups graduated less than 50 percent of entering college students in six years (Table IV.1). Figure IV.6 illustrates that after 2002 the six-year graduation rate trend for all students stayed almost constant

and did not improve over time. It also illustrates that for adopter states these problems are more profound, since states that established a CCB policy have on average lower six-year graduation rates for students of all races during all the analytical period. The lower graduation rates among adopting states may have been an incentive to change to a CCB policy. It is possible that CCB policies were seeking to close the gap between these groups.

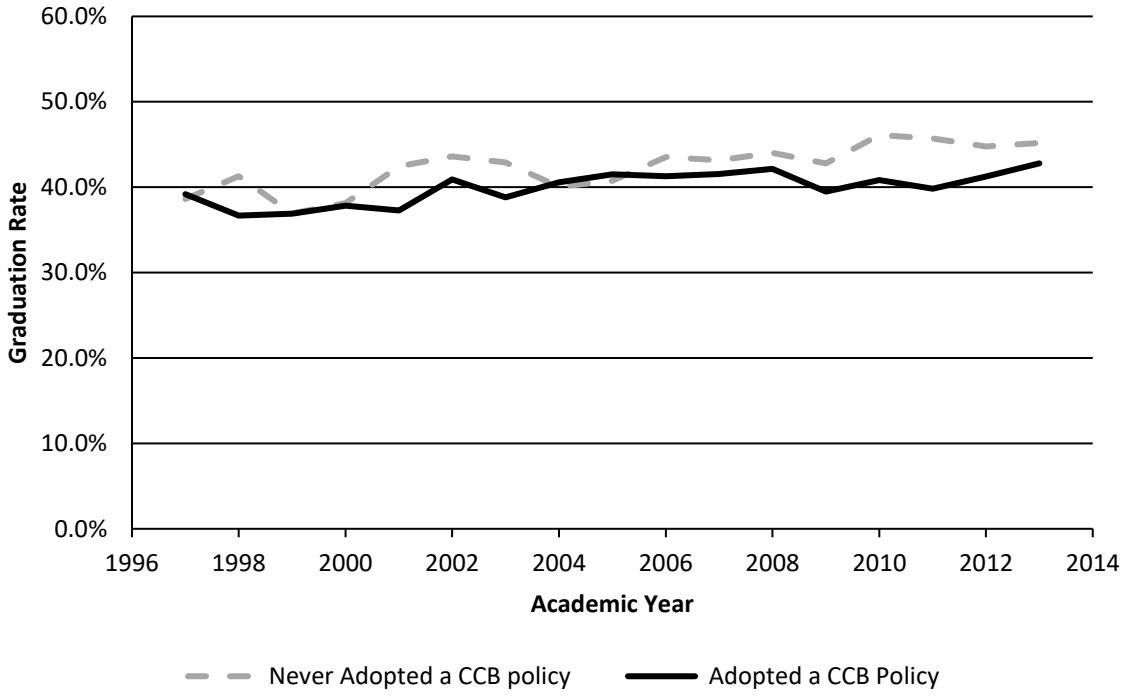


Source: Calculated from Jaquette-Parra HEGIS-IPEDS

Figure IV.6. Mean Six-Year Graduation Rate for Student of All Races in Public Four-Year Institutions for Adopting and Non-adopting CCB states, 1997-2013

In regards to equity, Table IV.1 shows that both adopters and non-adopters have about a six-percentage-point gap between the graduation rate of all students and the graduation rate of Latinos. There is also a gap between Latino graduation rates of adopter and non-adopter states. States that have adopted a CCB policy have a lower graduation rate for Latinos (36 percent) than non-adopters (40 percent) (Table IV.1). Figure VI.7 shows that in these two decades, non-

adopter states have experienced an increase of six percentage points in six-year graduation rates for Latinos, while adopters have managed to increase Latino graduation rates by just three percentage points.



Source: Calculated from Jaquette- Parra HEGIS-IPEDS

Figure IV.7. Six-Year Graduation Rate for Latino Students in Public Four-Year Institutions by CCB policy, 1997-2013

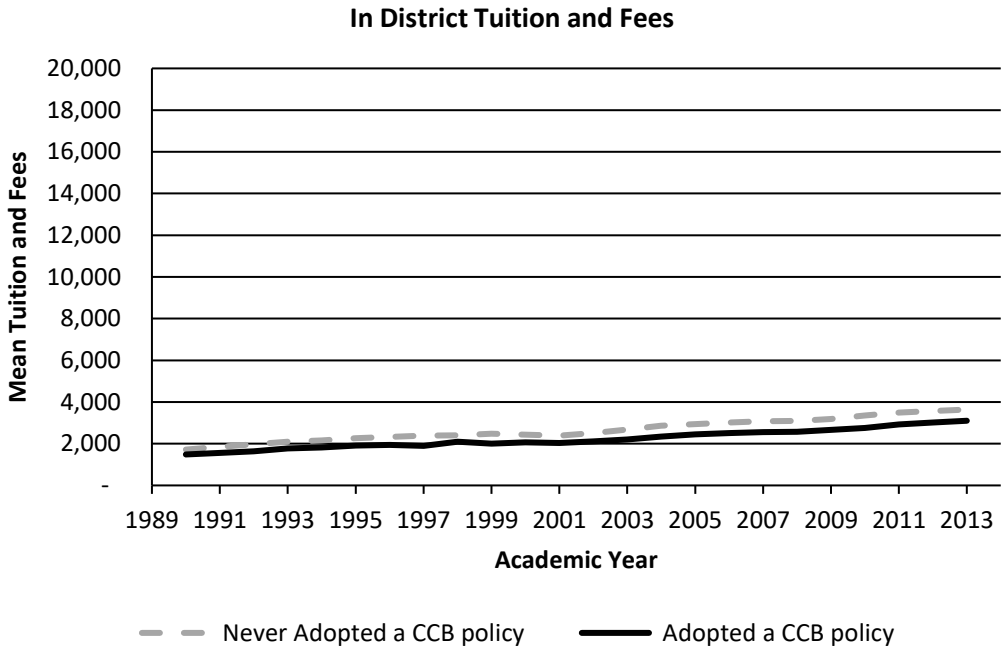
These results are troubling, given that adopter states have a larger Latino population and enroll larger number of Latinos in their public institutions. The states that have the most responsibility to educate larger numbers of Latinos and fight inequity are doing more poorly in educating this population—especially important because Latino demographics are driving overall U.S. population growth. It is also concerning that equity discussions are not a salient part of the policy rationales when a CCB policy is proposed. Though all states should be concerned about closing the graduation gap between Latinos and all students, adopter states have more

pressure to innovate with interventions that address the stagnation of graduation rates among all students including Latinos.

Differences in Higher Education Structure and Coping Strategies.

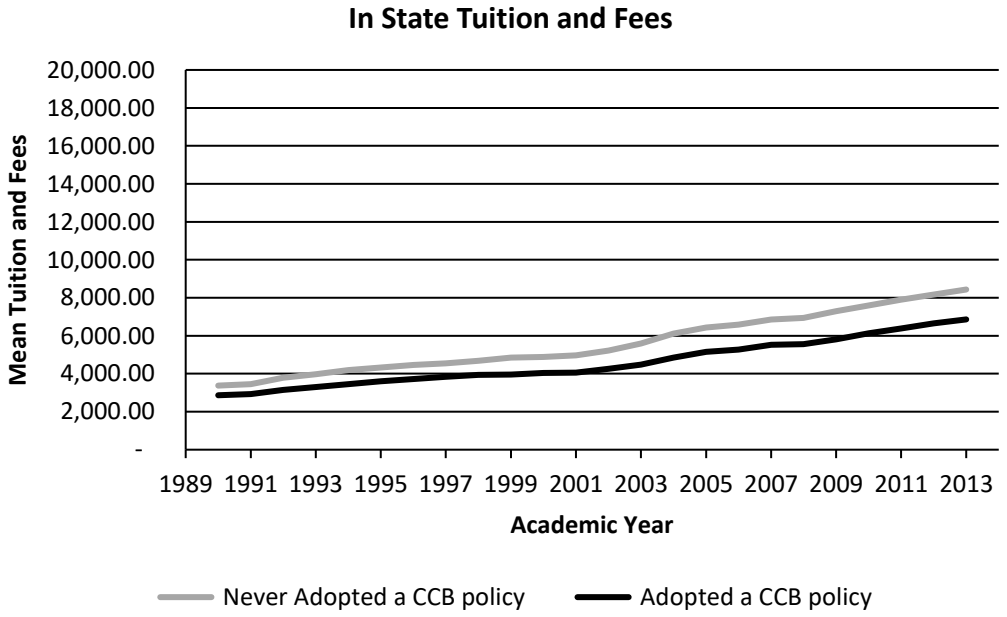
Adopter and non-adopter States differ in the structures they have in place to face economic downturns and market-driven ideological pressures as well as in their specific demographic and academic preparation challenges. Table IV.1 shows that adopter states rely more on four-year public institutions to educate the majority of their college students while non-adopter states have a larger percentage of students enrolled in private institutions and in two-year public colleges. These enrollment patterns have changed little over time (see Appendix B.15-B17). Governments in adopter states may have a habitual way of solving educational challenges using the public four-year system, since it serves most of their students. It may be easier for legislators in those states to view CCBs as simply extending that system. Alternatively, governments at adopter states may not have the flexibility to solve the baccalaureate demand problem with private institutions, since they have smaller private systems than in non-adopter states.

Strategies to cope with declines in state appropriations are different too. Non-adopter states have higher in-district, in-state, and out-of-state tuitions and fees (Table IV.1). Figures IV.8 to IV.10 shows that although tuition and fees have grown for both groups, the trends for in-state tuition and out-of-state tuition in non-adopter states are more strongly upward. Out-of-state tuition and fees in non-adopter states represent the fastest-growing trend in college sticker prices. Non-adopter states are more likely to pass along these costs to individuals or to the federal government.



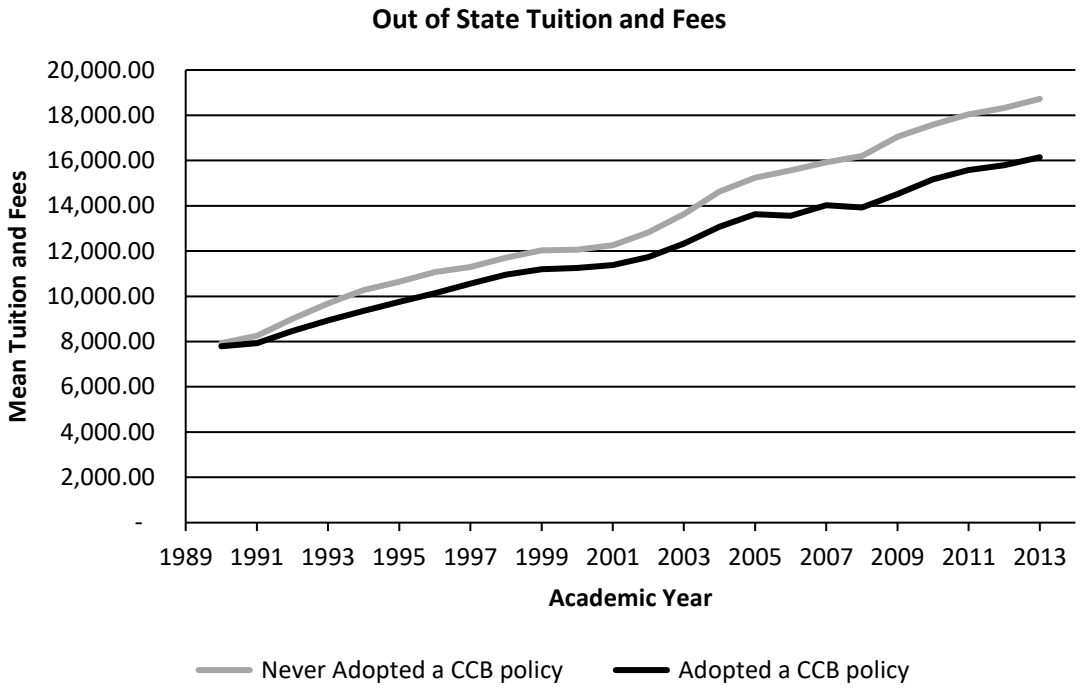
Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure IV.8. Mean Tuition and Fees at Public Two-Year Institutions for Adopting and Non-adopting States, 1990-2013 (2014 Dollars)



Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure IV.9. Mean InstateTuition and Fees at Public Four-Year Institutions for Adopting and Non-adopting States, 1990-2013 (2014 Dollars)



Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure IV.10. Mean Out of State Tuition and Fees at Public Four-Year Institutions for Adopting and Non-adopting States, 1990-2013 (2014 Dollars).

Non-adopter states' institutions and governments may be using the pricing of public education to create more revenue and resources instead of changing the structure of the system and the mission of the institutions by implementing CCBs. Higher pricing may be more possible at non-adopter states because their families have on average slightly higher per-capita annual median income: $1,871 more in real dollars than families in adopter states (Table IV.1). Given the higher education structure of non-adopter states, families that cannot afford the price increase may be expected to attend their large community college system, which had a lower price increase over these 20 years. Non-adopter states may also be more concerned about attracting out-of-state students than answering to local demand, since their own populations are declining.

Adopters, however, may not have the luxury of increasing prices as fast as non-adopters, because of the lower per-capita income of their families. Adopter states also face a larger population coming through the educational pipeline and a smaller private college system to help resolve educational issues.

Effects of a CCB Policy on Access

Does a CCB policy change have a positive effect on the undergraduate enrollment of students of all races, and specifically on the Latino undergraduate enrollment at public four-year institutions? The answer is important because access and enrollment issues are at the heart of rationales supporting CCB policy. The strategic location, established facilitates, and lower tuition costs of community colleges appeal to legislators as viable ways to respond to student demand and increase the affordability of a bachelor's education (Manias, 2007; McKinney, et al., 2010; McKinneay et al., 2013). Additionally, considering that colleges and universities historically have a government-protected monopoly on students seeking baccalaureate degrees (Dougherty, 1994a), a CCB policy allows community colleges to enter into new markets and thus increase enrollment, revenue, and political support by appealing to different students (Bailey & Morest, 2004 , Daun-Barnett, 2011; Moker and McLendon, 2010). At the same time, policy makers hope to prompt students to enroll in lower-cost institutions and cut government expenditures by transforming community colleges into baccalaureate institutions (Doyle and Zumeta, 2014). This study examined whether states allowing CCBs achieved these goals.

Table IV.3 presents descriptive statistics for the independent variables included in the fixed-effects panel models. I present descriptive statistics for the full sample and disaggregated

by states that never adopted a CCB policy and by states that allowed CCBs, before and after adoption.

Table IV.2: Summary Statistics for Full Sample, States that Never Adopted a CCB Policy, and States that Allowed CCBs Before and After Adoption

	Full Sample		
	Obs	Mean	Std. Dev.
6 year Graduation Rate All Races All Institution Types	850	0.477	0.085
6 year Graduation Latinos All Institution Types	850	0.413	0.103
6 year Graduation Rates Public Institutions All Races	849	0.449	0.092
6 year Graduation Rate Public Institutions Latinos	849	0.382	0.105
% Enrolled in Two-Year Public	1200	0.332	0.146
% Enrolled in Four-Year Public	1200	0.461	0.151
% Enrolled in Two-Year Private	1200	0.004	0.005
% Enrolled in Four-Year Private	1200	0.164	0.110
% Enrolled in For Profit	1200	0.042	0.054
PerFTE HE State Appropriations	1199	6022.744	2438.309
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	1175	2465.746	1037.293
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	1200	5132.131	2277.397
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	1200	12703.790	4546.718
PerFTE State and Local Grants for Fellowships and Scholarships	1199	361.223	315.111
High School Survival Rate	1200	72.737	8.871
Percentage of HighShcool Students who took SAT test	1200	37.023	28.784
SAT Scores Critical Reading	1250	501.960	3.673
SAT Scores Math Total	1250	511.520	5.737
Percapita Expenditures for K-12 Education (Real 2014 Values)	1200	1622.453	376.917
Unemployment Rate	1250	5.691	1.860
Median Income (Real 2014 Values)	1249	54368.820	8642.039
% Latino Population	1250	0.082	0.092
% White Population	1250	0.758	0.150
% Black Population	1250	0.100	0.094
% Native American	1250	0.016	0.029
% Asian (old definition)	1250	0.035	0.076
Citizen Ideology Index	1200	50.137	15.110
Government Ideology Index	1200	49.271	27.501
Partisan Composition of Legislature	625	1.864	0.746

	Never Adopted a CCB Policy		
	Obs	Mean	Std. Dev.
6 year Graduation Rate All Races All Institution Types	476	0.499801	0.087067
6 year Graduation Latinos All Institution Types	476	0.427963	0.111622
6 year Graduation Rates Public Institutions All Races	476	0.480267	0.089081
6 year Graduation Rate Public Institutions Latinos	476	0.404943	0.107437
% Enrolled in Two-Year Public	672	0.357167	0.154365
% Enrolled in Four-Year Public	672	0.417206	0.154557
% Enrolled in Two-Year Private	672	0.004632	0.005194
% Enrolled in Four-Year Private	672	0.177278	0.123489
% Enrolled in For Profit	672	0.042753	0.063086
PerFTE HE State Appropriations	671	5966.476	2655.473
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	672	2589.63	1099.431
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	672	5567.994	2281.469
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	672	13458.78	4720.896
PerFTE State and Local Grants for Fellowships and Scholarships	671	377.3715	344.2748
High School Survival Rate	672	73.35173	8.377755
Percentage of HighShcool Students who took SAT test	672	41.43006	30.27772
SAT Scores Critical Reading	700	501.96	3.673919
SAT Scores Math Total	700	511.52	5.739046
Percapita Expenditures for K-12 Education (Real 2014 Values)	672	1666.858	424.1791
Unemployment Rate	700	5.701179	1.877321
Median Income (Real 2014 Values)	699	55405.69	9137.615
% Latino Population	700	0.06935	0.07551
% White Population	700	0.772361	0.125127
% Black Population	700	0.108345	0.099102
% Native American	700	0.016647	0.032405
% Asian (old definition)	700	0.026105	0.024487
Citizen Ideology Index	672	50.51493	14.85789
Government Ideology Index	672	50.70141	26.98033
Partisan Composition of Legislature	352	1.829545	0.715663

	Before Adopting a CCB Policy			After Adopting a CCB Policy		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
6 year Graduation Rate All Races All Institution Types	119	0.445	0.074	255	0.451	0.072
6 year Graduation Latinos All Institution Types	119	0.380	0.080	255	0.400	0.089
6 year Graduation Rates Public Institutions All Races	118	0.411	0.086	255	0.408	0.078
6 year Graduation Rate Public Institutions Latinos	118	0.339	0.092	255	0.359	0.096
% Enrolled in Two-Year Public	253	0.332	0.134	275	0.270	0.117
% Enrolled in Four-Year Public	253	0.510	0.131	275	0.523	0.121
% Enrolled in Two-Year Private	253	0.003	0.004	275	0.004	0.004
% Enrolled in Four-Year Private	253	0.131	0.063	275	0.163	0.102
% Enrolled in For Profit	253	0.027	0.024	275	0.052	0.045
PerFTE HE State Appropriations	253	6575.237	2024.827	275	5651.746	2133.855
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	250	1964.500	777.577	253	2631.999	937.440
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	253	3686.293	1522.133	275	5397.213	2313.332
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	253	10143.780	3588.735	275	13214.110	4040.748
PerFTE State and Local Grants for Fellowships and Scholarships	253	248.067	189.060	275	425.925	307.868
High School Survival Rate	253	72.386	8.879	275	71.556	9.875
Percentage of HighShcool Students who took SAT test	253	25.601	20.637	275	36.760	28.648
SAT Scores Critical Reading	253	502.739	2.920	297	501.296	4.102
SAT Scores Math Total	253	508.296	6.195	297	514.266	3.463
Percapita Expenditures for K-12 Education (Real 2014 Values)	253	1455.955	212.108	275	1667.123	327.463
Unemployment Rate	253	5.406	1.637	297	5.909	1.971
Median Income (Real 2014 Values)	253	52894.000	8006.480	297	53184.660	7590.494
% Latino Population	253	0.086	0.102	297	0.109	0.111
% White Population	253	0.760	0.169	297	0.722	0.180
% Black Population	253	0.082	0.078	297	0.095	0.091
% Native American	253	0.019	0.026	297	0.012	0.021
% Asian (old definition)	253	0.050	0.132	297	0.043	0.086
Citizen Ideology Index	253	47.320	13.637	275	51.804	16.642
Government Ideology Index	253	50.124	23.645	275	44.992	31.441
Partisan Composition of Legislature	126	2.119	0.786	147	1.728	0.736

	Before Adopting a CCB Policy			After Adopting a CCB Policy		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
6 year Graduation Rate All Races All Institution Types	119	0.445	0.074	255	0.451	0.072
6 year Graduation Latinos All Institution Types	119	0.380	0.080	255	0.400	0.089
6 year Graduation Rates Public Institutions All Races	118	0.411	0.086	255	0.408	0.078
6 year Graduation Rate Public Institutions Latinos	118	0.339	0.092	255	0.359	0.096
% Enrolled in Two-Year Public	253	0.332	0.134	275	0.270	0.117
% Enrolled in Four-Year Public	253	0.510	0.131	275	0.523	0.121
% Enrolled in Two-Year Private	253	0.003	0.004	275	0.004	0.004
% Enrolled in Four-Year Private	253	0.131	0.063	275	0.163	0.102
% Enrolled in For Profit	253	0.027	0.024	275	0.052	0.045
PerFTE HE State Appropriations	253	6575.237	2024.827	275	5651.746	2133.855
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	250	1964.500	777.577	253	2631.999	937.440
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	253	3686.293	1522.133	275	5397.213	2313.332
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	253	10143.780	3588.735	275	13214.110	4040.748
PerFTE State and Local Grants for Fellowships and Scholarships	253	248.067	189.060	275	425.925	307.868
High School Survival Rate	253	72.386	8.879	275	71.556	9.875
Percentage of HighShcool Students who took SAT test	253	25.601	20.637	275	36.760	28.648
SAT Scores Critical Reading	253	502.739	2.920	297	501.296	4.102
SAT Scores Math Total	253	508.296	6.195	297	514.266	3.463
Percapita Expenditures for K-12 Education (Real 2014 Values)	253	1455.955	212.108	275	1667.123	327.463
Unemployment Rate	253	5.406	1.637	297	5.909	1.971
Median Income (Real 2014 Values)	253	52894.000	8006.480	297	53184.660	7590.494
% Latino Population	253	0.086	0.102	297	0.109	0.111
% White Population	253	0.760	0.169	297	0.722	0.180
% Black Population	253	0.082	0.078	297	0.095	0.091
% Native American	253	0.019	0.026	297	0.012	0.021
% Asian (old definition)	253	0.050	0.132	297	0.043	0.086
Citizen Ideology Index	253	47.320	13.637	275	51.804	16.642
Government Ideology Index	253	50.124	23.645	275	44.992	31.441
Partisan Composition of Legislature	126	2.119	0.786	147	1.728	0.736

Table IV.3 presents fixed-effects regression results for the total undergraduate enrollment in public four-year institutions for students of all races as the dependent variable. Column (1) and (2) include dependent variables of interest only. Column (3) is the reduced version of the model. To avoid multicollinearity, this reduced version included only a few uncorrelated variables representing each block of my theory. Column (4) is the fully specified model. Column (5) is the event study analysis with the reduced version of the model. Column (6) is the event study analysis with the fully specified model. The two last columns are designed to identify states at the point of time the effects of the policy take place and to identify specific time trends and time-varying effects of CCB adoption.

Table IV.3. The Effect of the Adoption of a Community College Baccalaureate Policy on the Undergraduate Enrollment of All Races at Public Four-Year Institutions

	Difference in Differences Coefficients			
	(1)	(2)	(3)	(4)
CCB Adoption Dummy	**0.216*** **	**0.083***	**0.036+**	**0.036+**
	0.039	0.037	(0.020)	(0.021)
Log Per FTE HE State Appropriations				0.008
				(0.025)
Log In district Tuition and Fees for Public 2 Year (Real 2014 Values)				0.049
				(0.039)
Log Instate Tuition and Fees for Public 4 Year (Real 2014 Values)			**-0.179****	**-0.178***
			(0.064)	(0.080)
Log Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)				-0.031
				(0.072)
Log Per FTE State and Local Grants for Fellowships and Scholarships			**0.015***	**0.012+**
			(0.007)	(0.007)
High School Survival Rate			0.001	0.002
			(0.001)	(0.001)
Percentage of High School Students who took SAT test			0.000	0.000
			(0.001)	(0.001)
Log Per capita Expenditures for K-12 Education (Real 2014 Values)			**-0.247***	**-0.269***
			(0.122)	(0.115)
Unemployment Rate			0.008	**0.010+**
			(0.005)	(0.005)
Log Median Income (Real 2014 Values)				0.082
				(0.092)
Log Total State Population			**0.889*****	**0.865*****
			(0.096)	(0.091)
Government Ideology Index			0.000	0.000
			(0.000)	(0.000)
State Fixed Effects	X	X	X	X
Year Fixed Effects		X	X	X
State Controls			X	X
R2 (Within)	0.252	0.604	0.773	0.777
Observations	1200	1200	1198	1173
States	50	50	50	49
F	30.5	22.3	62.4	92.3

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses, errors clustered by state

The sign of the policy change dummy is positive in all columns, indicating a positive relationship of the change in policy on total undergraduate enrollment at public four-year institutions. The coefficient for the dummy representing the adoption of a community college baccalaureate policy in the state in columns 1, 2, 3, and 4 is statistically significant at a $p<.1$. It appears that allowing community colleges to offer some baccalaureate degree increases the number of students enrolling in four-year programs. States that have changed their policy to allow CCBs have approximately 0.051 percent more total undergraduate enrollment after the shift tp the policy. If a state switches from not allowing CCBs to allowing CCBs, the impact of the policy on total undergraduate enrollment could increase from three to five percent, controlling for all other variables.

However, when I did the event study analysis to identify how long after the policy change the increase on enrollment took place, I found that the effect was not statistically significant in any of the five years subsequent to the policy.

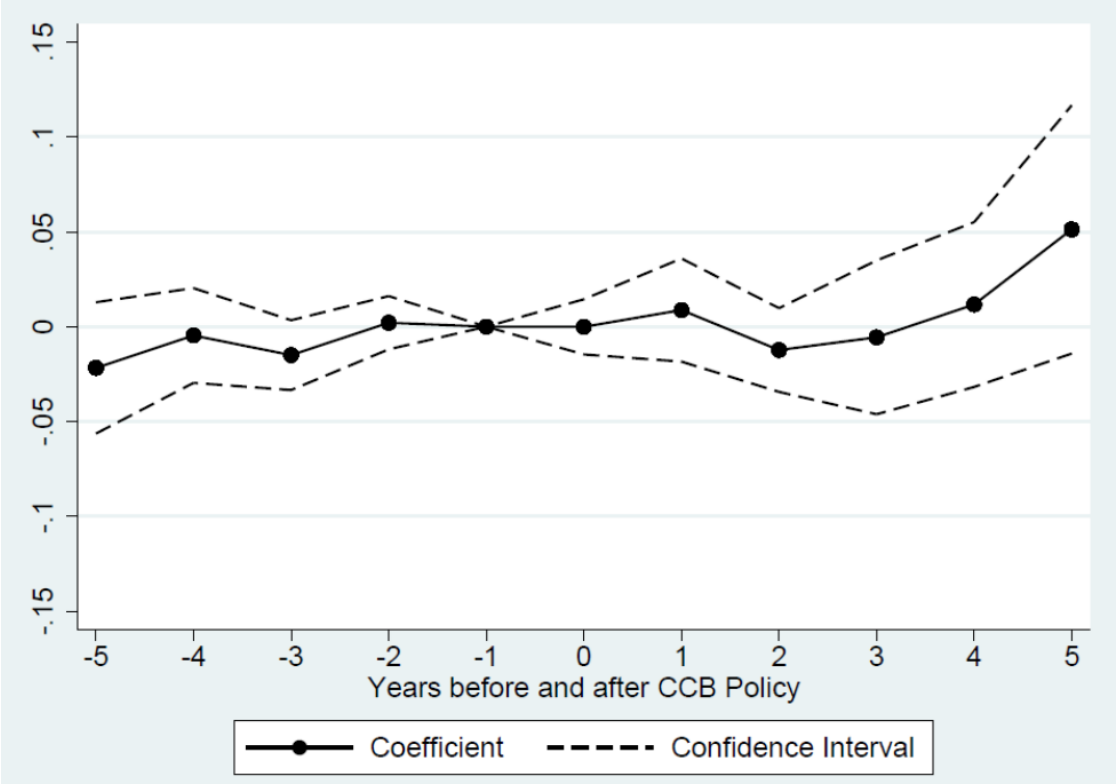


Figure IV.11. Event study estimates of the impact of a CCB policy on the total undergraduate enrollment at public four-year institutions

The effects on enrollment for all students in public four-year institutions take a few years to materialize (Figure IV.11). Enrolment starts picking up two years after the adoption policy and continues with an upward trend in years three to five. But the dotted lines show that these effects have large confidence intervals and thus are not statistically significant.

Robustness Check.

One concern with the main results is that the sample includes all states in the U.S. For my robustness check, I ran my estimations again using only the 22 adopter states as the sample. This sample includes Michigan, New York, and California, states that adopted a CCB policy before or after the analytical period. The results in Table IV.4 are different from the main results presented in Table IV.3. The coefficient of the dummy representing the change into a

CCB policy lost its statistical significance. More importantly, there is no clear indication if the relation of the policy with undergraduate enrollment in four-year institutions is positive or negative. The coefficient of the policy has a positive relation in column 1 and 2 and a negative coefficient in column 3 and 4. The results of the event study analysis show a statistically significant effect in year two after the policy and a clear positive trend in year three, four, and five after the policy, but, as in the main results, the coefficients are not statistically significant.

These estimation results also differ for the control variables. Appropriations per full-time students and per-capita median income become significant with this sample and have a positive relation to undergraduate enrollment in public four-year institutions.

Table IV.4. Effect of a Community College Baccalaureate Policy on the Undergraduate Enrollment of All Races at Public Four-Year Institutions. Robustness Check – Only Adopter States

	(1)	(2)	(3)	(4)	(5)	(6)
CCB Adoption Dummy	**0.227*** **	0.034	-0.021	-.017	**N/A**	**N/A**
	(0.040)	(0.030)	(0.020)	(0.018)	**N/A**	**N/A**
Log Per FTE HE State Appropriations				**0.041** **		**0.039** **
				(0.014)		(0.014)
Log Instate Tuition and Fees for Public 4 Year (Real 2014 Values)			**-0.224** **	-0.149	**-0.219** **	**-0.145***
			(0.095)	(0.124)	(0.094)	(0.123)
Log Median Income (Real 2014 Values)				**0.215+**		**0.218+**
				(0.109)		(0.113)
Log Total State Population			**0.940*** **	**0.928*** **	**0.940*** **	**0.917*** **
			(0.148)	(0.119)	(0.155)	(0.133)
t2					**-0.034***	**-0.032***
					(0.016486)	(0.01612)
State Fixed Effects	X	X	X	X	X	X
Year Fixed Effects		X	X	X	X	X
State Controls			X	X	X	X
R2 (Within)	0.366	0.649	0.832	0.847	0.835	0.850
Observations	528	528	24	503	528	503
States	22	22	22	21	22	21

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses, errors clustered by state

The effects of a change to a CCB policy in Latino undergraduate enrollment at public four-year institutions

Table IV.5 presents fixed effects regression results for the total Latino undergraduate enrollment in public four-year institutions as the dependent variable.

Table IV.5. The Effects of the Adoption of a Community College Baccalaureate Policy with Latinos' Student Enrollment at Public Four-year Institutions

	Difference in Difference Coefficients			
	(1)	(2)	(3)	(4)
CCB Adoption Dummy	**0.719*** **	.0208	0.013	0.020
	(0.061)	(0.065)	(0.065)	(0.065)
Log Per FTE HE State Appropriations				0.034
				(0.037)
Log In district Tuition and Fees for Public 2 Year (Real 2014 Values)				-0.006
				(0.090)
Log Instate Tuition and Fees for Public 4 Year (Real 2014 Values)			0.081	0.098
			(0.160)	(0.140)
Log Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)				0.033
				(0.152)
Log Per FTE State and Local Grants for Fellowships and Scholarships			0.015	0.013
			(0.015)	(0.015)
High School Survival Rate			**-0.003+**	-0.003
			(0.002)	(0.002)
Percentage of High School Students who took SAT test			0.005	0.005
			(0.003)	(0.003)
Log Per capita Expenditures for K-12 Education (Real 2014 Values)			0.003	-0.094
			(0.223)	(0.214)
Unemployment Rate			-0.020	-0.016
			(0.012)	(0.013)
Log Median Income (Real 2014 Values)				0.085
				(0.198)
Log Latino State Population			**0.450*** **	**0.444*** **
			(0.088)	(0.094)
Government Ideology Index			0.000	0.000
			(0.000)	(0.000)
State Fixed Effects	X	X	X	X
Year Fixed Effects		X	X	X
State Controls			X	X
R2 (Within)	0.208	0.869	0.909	0.910
Observations	1150	1150	1149	1125
States	50	50	50	49

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses, errors clustered by state

The coefficient for the dummy representing the adoption of a community college baccalaureate policy in the state is positive in all columns. These results indicate a positive relation between changing to a CCB policy and Latino enrollment. This relationship is statistically significant, however, only when controlling for state fixed effects. The policy change is not significant in all subsequent columns. Thus, there is not sufficient evidence to confirm that a CCB policy increases the number of Latino students enrolling in four-year institutions. This is inconsistent with hypothesis number four of this study. It appears that allowing community colleges to offer some baccalaureate degree has a positive effect on Latino enrollment, but the coefficient is not statistically significant. The event study analysis confirms these results, showing that that the effect was not statistically significant in any of the five years subsequent to the policy.

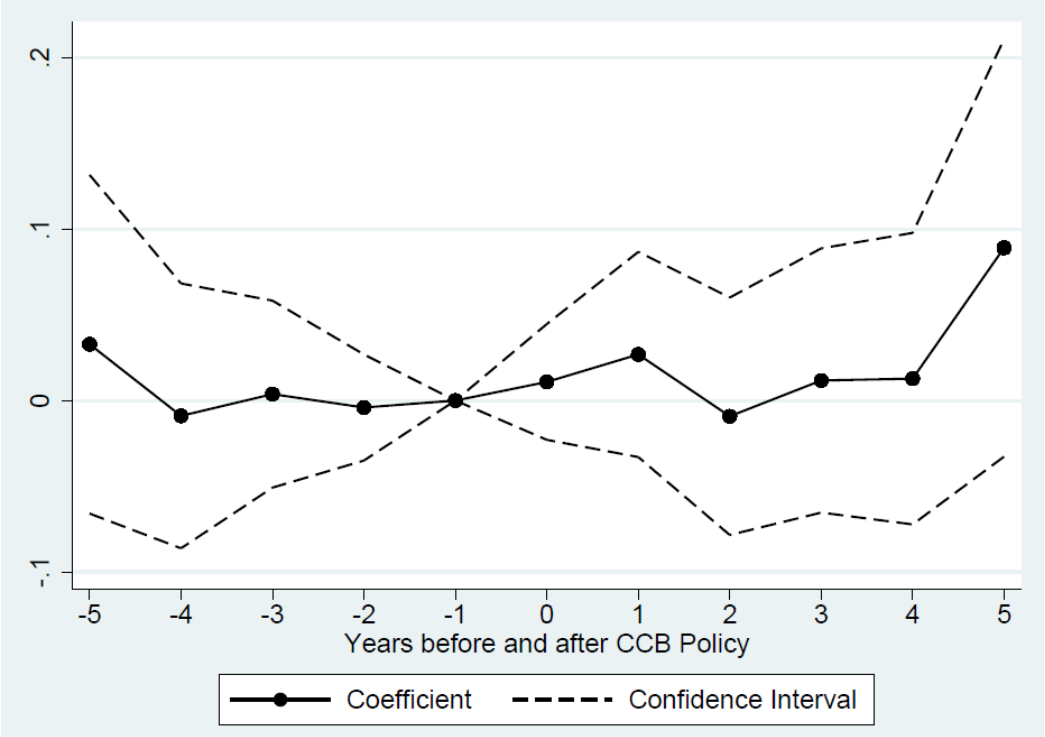


Figure IV.12. Event study estimates of the impact of a CCB policy on Latino undergraduate enrollment at public four-year institutions.

Figure IV.12 does not show a specific trend in Latino enrollment after the adoption of the policy. The dotted lines show that the effects of the policy in subsequent years after the change have large confidence intervals and thus are not statistically significant. It also shows there is no evidence of specific state trends that affect Latino enrollment in public institutions before the CCB policy.

The relation of a change into a CCB policy and enrollment for all undergraduate students in four-year public institutions and for Latinos is positive but not statistically significant. It appears that allowing community colleges to offer some baccalaureate degrees increases the number of all students enrolling in four-year institutions, but this relationship loses its statistical significance in the event study analysis. For Latinos, although the policy shows a positive relationship, it does not achieve statistical significance in any version of the model.

Robustness Check.

For my robustness check, I ran my estimations again using only adopter states as the sample. This sample included Michigan, New York, and California, the states that adopted a CCB policy before or after the analytical period. The results in Table IV.5 are similar to the main results presented in Table IV.6. The change into a CCB policy has a positive relation to Latino undergraduate enrollment in public four-year institutions but is not statistically significant. This is consistent with the main results.

In this estimation appropriations per full-time student and median income become statistically significant and have a positive relation with Latino enrollment. There is a similar result for the robustness check estimation of undergraduate enrollment for all students.

Table IV.6. Effects of a Community College Baccalaureate Policy with Latinos' Student

Enrollment at Public Four-year Institutions. Robustness Check-Only Adopter States

	(1)	(2)	(3)	(4)	(5)	(6)
CCB Policy Dummy	**0.735*** **	0.065	0.014	0.028	**N/A**	**N/A**
	0.064	(0.070)	(0.054)	(0.053)	**N/A**	**N/A**
Log Per FTE HE State Appropriations				**0.066***		**0.057+**
				(0.029)		(0.028)
Log In district Tuition and Fees for Public 2 Year (Real 2014 Values)				**0.240+**		**0.237+**
				(0.134)		(0.136)
High School Survival Rate			**-0.007****	**-0.007****	**-0.007****	**-0.007****
			(0.002)	(0.002)	(0.002)	(0.002)
Log Median Income (Real 2014 Values)				**0.402+**		**0.428+**
				(0.231)		(0.225)
Log Latino State Population			**0.426****	**0.418***	**0.399****	**0.386****
			(0.137)	(0.127)	(0.134)	(0.122)
State Fixed Effects	X	X	X	X	X	X
Year Fixed Effects		X	X	X	X	X
State Controls			X	X	X	X
R2 (Within)	0.440	0.850	0.850	0.900	0.901	0.900
Observations	506	506	506	482	506	482
States	22	22	22	22	22	22

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses, errors clustered by state

Impact of a Change into a CCB policy on Six-year graduation Rates of All Students in Public Four-Year Institutions

CCB policy also responds to rationales that seek to increase baccalaureate degree completion. Policy makers see the CCB as a way to correct a market failure in which industry demands are not satisfied by the number of baccalaureate professionals in their communities. They seek to resolve the shortage of qualified workers and hope that allowing CCBs will fill the gap between supply and demand of qualified personnel with a bachelor's degree in

expanding local industries. In this way, they can avoid bottlenecks that might hinder economic development.

Additionally, giving community colleges the authority to confer baccalaureate degrees creates another path to provide bachelor's degrees that does not require cooperation among two– and four-year institutions (Floyd, 2005). Through this policy, CCB supporters seek to eliminate the problems that might arise during the transfer process, because this transition directly affects the number of college graduates that the state can generate (Ewell, Boeke and Zis, 2008). However, there is a chance that a CCB policy ultimately does not help students attain baccalaureate degrees. The results evaluate whether a CCB policy change has a positive effect on the graduation rates for all students and for Latinos.

Table IV.7 represents fixed-effects regression results of CCB policy on the state average six-year graduation rate for all students in public four-year institutions. Column (1) and (2) include variables of interest only. Column (3) is the reduced version of the model. To avoid multicollinearity, this reduced version only included a few uncorrelated variables representing each block of my theory. Column (4) is the fully specified model. Column (5) is the event study analysis with the reduced version of the model. Column (6) is the event study analysis with the fully specified model. The last two columns are designed to identify at what point of time the effects of the policy take place and to identify specific time trends and time-varying effects of CCB adoption.

Table IV.7. The Effects of the Adoption of a Community College Baccalaureate Policy with Average Six-year Graduation Rate for All Students in Public Four-year Institutions

	Difference in Differences Coefficients			
	(1)	(2)	(3)	(4)
CCB Policy Adoption Dummy	**.034*** **	-0.002	0.001	0.000
	(0.005)	(0.006)	(0.007)	(0.005)
Log Per FTE HE State Appropriations			-0.005	-0.006
			(0.005)	(0.005)
Log In district Tuition and Fees for Public 2 Year (Real 2014 Values)				0.013
				(0.013)
Log Instate Tuition and Fees for Public 4 Year (Real 2014 Values)			0.016	0.023
			(0.017)	(0.022)
Log Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)				-0.030
				(0.018)
Log Per FTE State and Local Grants for Fellowships and Scholarships			-0.001	-0.001
			(0.003)	(0.003)
High School Survival Rate			0.000	0.000
			(0)	(0)
Percentage of High School Students who took SAT test			0.000	0.000
				(0)
Log Per capita Expenditures for K-12 Education (Real 2014 Values)			0.026	0.043
			(0)	(0.039)
Unemployment Rate			0.000	-0.001
			(0.04)	(0.004)
Log Median Income (Real 2014 Values)				-0.028
				(0.0283)
Log Total State Population			-0.033	-0.059
			(0.004)	(0.069)
Government Ideology Index			0.000	0.000
			(2E-04)	(0)
State Fixed Effects	X	X	X	X
Year Fixed Effects		X	X	X
State Controls			X	X
R2 (Within)	0.073	0.423	0.435	0.45
Observations	849	849	848	830
States	50	50	50	49
F	46	22	26	33

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses; errors clustered by state

The CCB policy does not show a consistent relation with six-year graduation rates for all students in public four-year institutions. The coefficient for the dummy representing the adoption of a community college baccalaureate policy is positive and significant when controlling for state fixed effects only. When we include year fixed effects and other controls are added to the model, the estimate for the change of policy is no longer significant. More importantly, the sign of the coefficient changed from positive to negative in the different columns. With this data set, the model fails to indicate if the policy has a positive or negative impact on graduation rates. These results are inconsistent with Hypothesis 1, which predicted that graduate rates for all students would be positively related to this change of policy.

Additionally, across all columns, most of the control variables are not statistically significant after including year fixed effects. The within R^2's estimated for all versions of the model also reflects this result. Table IV.7 indicates that the reduced form of the model and the subsequent fully specified models explained around 15 percent of the variance within states in the average graduation rate. However, the model achieves this explanatory power only when we include state fixed effects and year effects (column 2). Including all other controls only improves the within R^2 slightly, which is bound to happen when we increase the variables in a model. Most of the variables represent environmental policies and systems in which higher education institutions are embedded and not institutional inputs that might affect graduation rate of the students. These system variables may affect institutions, but their effects on graduation rates are buffered by other institutional factors that are more directly related to the students' college experience.

A few elements of my methods may be skewing the relationship among the variables, such as averaging graduation rates of each state that include a broad assortment of public four-

year institutions. Also, estimating coefficients based on variation within each state over time and averaging those results across the sample may be misinterpreting the relationship among the variables. More valuable insights about six-year graduation rates for all students and their relation to the implementation of a CCB policy might arise when comparing institutional level data in one state.

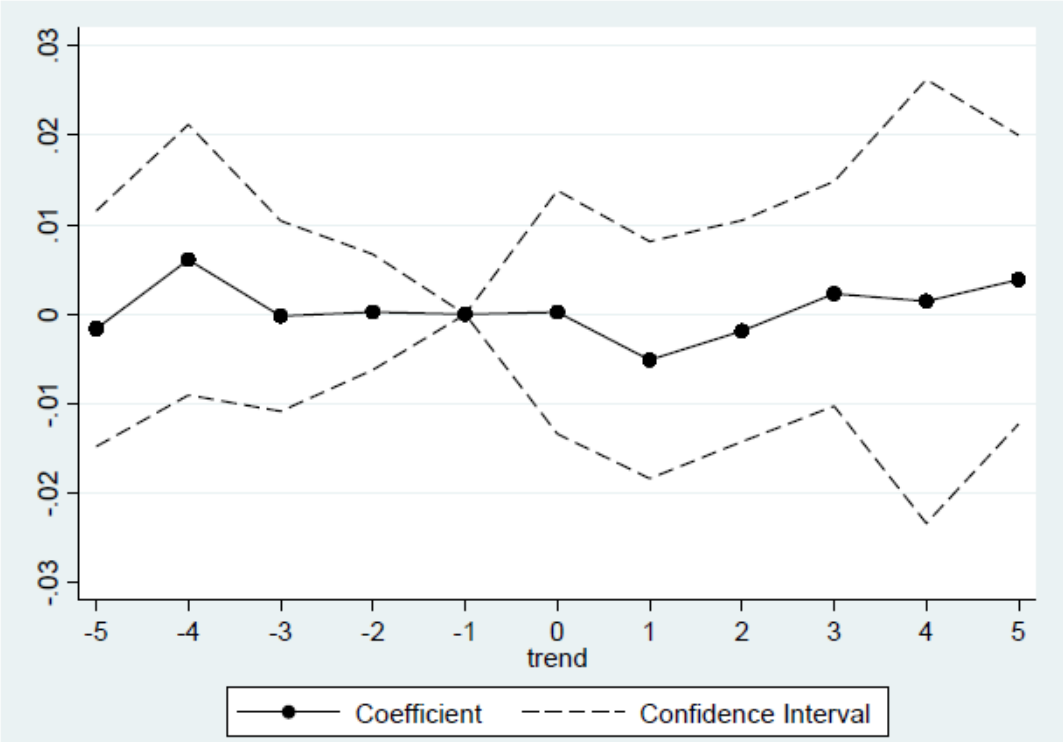


Figure IV.13. Event study estimates of the impact of a CCB policy on state average six-year graduation rates for all students in public four-year institutions

Figure IV.13 shows the event study estimates of the impact of a CCB policy on state average six-year graduation rates for all students in public four-year institutions. The black solid line in Figure IV.13 shows the event study estimates of six-year graduation rates for all students in public institutions in adopting states five years before and five years after CCB policy adoption. The dotted line represents the 95 percent confidence intervals. The graph shows that six-year

graduation rates are very close to zero and the estimated effects of the policy are imprecise. There is no evidence of specific state trends that affect six-year graduation rates for all students in public institutions before the CCB policy.

Robustness Check.

For my robustness check, I ran my estimations again using only the 22 adopters states as the sample. This sample includes Vermont, West Virginia, Utah, and Ohio, for which I didn't have graduation rate information previous to the change. It also includes Michigan, New York, and California, the states that adopted CCB before or after the analytical period. The results in Table IV.8 are slightly different from the main results presented in Table IV.7. The dummy representing the CCB policy change is positive in column one and negative in all other columns. However, this relation is not statistically significant, and the coefficients are very small and not at all substantive. Thus, again the change to a CCB policy does not have a clear relation to six-year graduation rate for students of all races in public four-year institutions.

One clear difference from the main results is that high school survival rate becomes significant with this sample. Its relation to college graduation rate is positive at $P<.05$ as soon as it is included in the model. Its coefficient is small, and it may not affect graduation rate substantively. However, conceptually it represents pre-college academic preparation, and for adopter states it may mean that any advancements in the previous academic preparation of its entering college students will help to strengthen their chances of graduating with a baccalaureate. The event study graph using this sample are in appendix B.19 and also confirm that there is no significant effect of the change to a CCB policy in graduation rates in any of the years after its adoption.

Table IV.8. The Effects of a Community College Baccalaureate Policy with Average Six-year Graduation Rate for All Students in Public Four-year Institutions. Robustness check-Only Adopter States

	(1)	(2)	(3)	(4)	(5)	(6)
CCB Policy Adoption Dummy	**.031*** **	-0.002	-0.004	-0.009	**N/A**	**N/A**
	(0.005)	(0.008)	(0.007)	(0.008)	**N/A**	**N/A**
High School Survival Rate			**0.002****	**0.002****	**0.002****	**0.002****
			(0.0005)	(0.0005)	(0.0005)	(0.0005)
Government Ideology Index			0.000	**-0.0002***	0.00001	0.000
			(0.0003)	(9E-05)	(0.0002)	(9E-05)
State Fixed Effects	X	X	X	X	X	X
Year Fixed Effects	X	X	X	X	X	X
State Controls		X	X	X	X	X
R2 (Within)	0.133	0.354	0.427	0.465	0.441	0.476
Observations	373	373	373	355	373	355
States	22	22	22	21	22	21

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses; errors clustered by state

The Effects of a Change into a CCB Policy in Latino Six-Year Graduation Rates at Public Four-Year Institutions

Community colleges serve large numbers of students underrepresented in higher education. Legislators' efficiency rationales in adopting CCB to respond to consumers and industry demands may have an implicit purpose of improving equity of attainment outcomes. My

study explored if this was the case: did CBB policy change have a positive effect in the graduation rates of Latinos?

Table IV.9 presents difference in differences effects regression results for the state average six-year graduation rate for Latinos in public four-year institutions as the dependent variable. This model is slightly different from the model for all students. Instead of including the log of total state population, it included the log of the Latino population and the log of white population in the state only. The guiding rationale of including Latino population was to more closely align population growth with Latino graduation rates. White population was included after a couple of exploratory-sensitive analyses kept showing this variable as statistically significant and with a substantive coefficient.

Table IV.9. The Effects of the Adoption of a Community College Baccalaureate Policy with Six-Year Graduation Rate for Latinos in Public Four-year Institutions

	Difference in Differences Coefficients			
	(1)	(2)	(3)	(4)
CCB Adoption Dummy	**.039*** **	-0.006	0.001	-0.002
	(0.009)	(0.016)	(0.012)	(0.012)
Log Per FTE HE State Appropriations			-0.01	-0.015
			(0.011)	(0.010)
Log In district Tuition and Fees for Public 2 Year (Real 2014 Values)				**0.042+**
				(0.023)
Log Instate Tuition and Fees for Public 4 Year (Real 2014 Values)			0.006	-0.015
			(0.033)	(0.037)
Log Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)				-0.027
				(0.034)
Log Per FTE State and Local Grants for Fellowships and Scholarships			-0.007	-0.008
			(0.005)	(0.005)
High School Survival Rate			0.000	0.000
			(0.001)	(0.001)
Percentage of High School Students who took SAT test			-0.001	0.000
			(0.001)	(0.001)
Log Per capita Expenditures for K-12 Education (Real 2014 Values)			0.039	0.020
			(0.062)	(0.063)
Unemployment Rate			0.003	0.001
			(0.005)	(0.005)
Log Median Income (Real 2014 Values)				-0.037
				(0.063)
Log State Hispanic Population			**-0.028***	-0.008
			(0.015)	(0.015)
Log State White				**-0.338*****
				(0.078)
Government Ideology Index			0.000	0.000
			(0.000)	(0.000)
State Fixed Effects	X	X	X	X
Year Fixed Effects		X	X	X
State Controls			X	X
R2 (Within)	0.018	0.150	0.160	0.187
Observations	850	850	849	831
States	50	50	50	49
F	16.0	16.8	25.8	22.2

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses; errors clustered by state

A community baccalaureate policy appears not to have an effect on the six-year graduation rate for Latinos in public four-year institutions. The coefficient for the dummy representing the adoption of a community college baccalaureate policy is positive and significant when controlling for state fixed effects only. When the model includes year fixed effects and other controls are added to the model, the estimate for the change of policy is no longer significant. The sign of the coefficient is negative for columns two and four and positive for one and three, providing inconclusive information as to the probable relation of the change in policy to Latino graduation rate. These results are inconsistent with Hypothesis 2, which predicted that graduation rates for Latinos would be positively related to this change of policy.

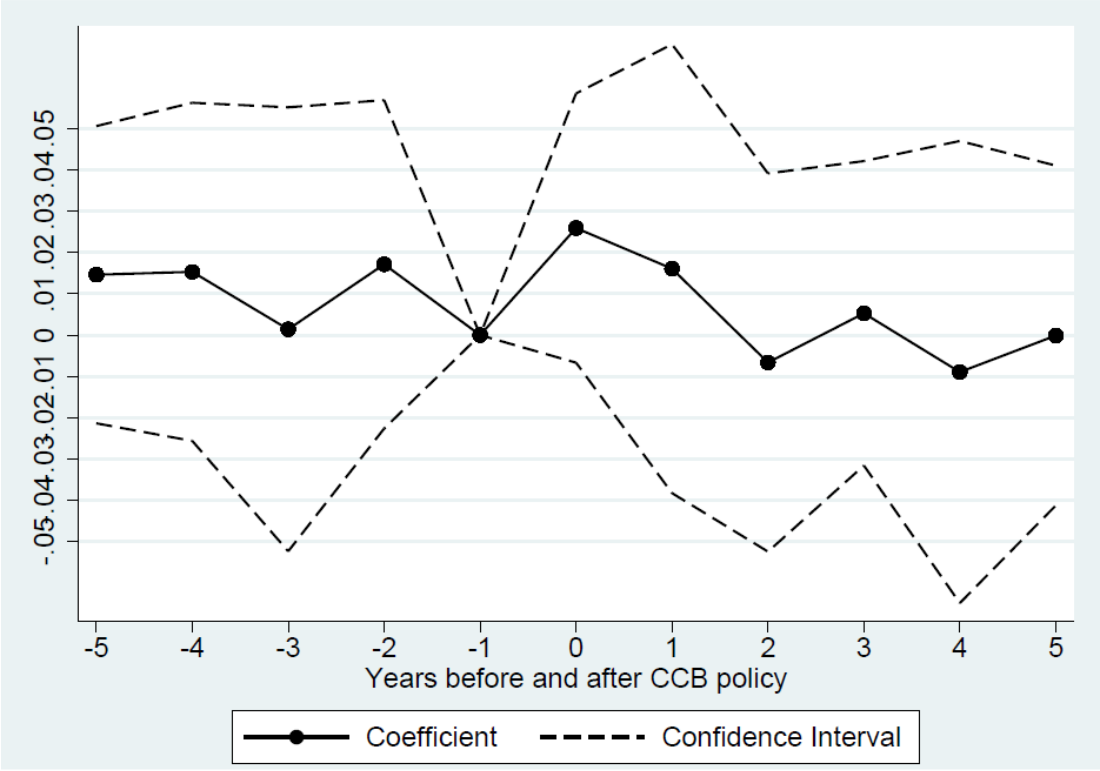


Figure IV.14. Event Study Estimates of the Impact of a CCB policy on State Average Six-Year Graduation Rate for Latino Students in Public Four-year Institutions

Figure IV.14 depicts the event study estimates of six-year graduation rates for Latino students in public institutions in adopting states five years before and five years after CCB policy adoption. The graph shows that six-year graduation rates are very close to zero and the estimated effects of the policy are imprecise. Also, there is no evidence of previews-specific state trends that affect six-year graduation rates for all students in public institutions before the CCB policy. This confirms the validity of the identification assumption for the difference-in- difference estimates.

Robustness check.

I ran my estimations again using only adopter states as the sample. The results in Table IV.10 are slightly different from the main results presented in Table IV.9. Using this data, the change into a CCB policy shows a positive relation to Latino six-year graduation rates at public four-year institutions, but it still not substantive or statistically significant. The event study results and graph using this sample (see appendix B.20) confirm that there is no statistically significant effect of the change into a CCB policy in graduation rates in any of the subsequent years after its adoption.

In this estimation, high school survival rate also becomes statistically significant. Its relation to Latino six-year graduation rate is positive at P<.1. For adopter states that may mean that advancements in the previous academic preparation of its Latino students will help to strengthen the possibility of graduating with a baccalaureate degree.

Table IV.10. The Effects of a Community College Baccalaureate Policy with Six-Year Graduation Rate for Latinos in Public Four-year Institutions. Robustness Check- Only Adopter States

	(1)	(2)	(3)	(4)	(5)	(6)
CCB Adoption Dummy	**.040*** **	0.004	0.008	0.009	**N/A**	**N/A**
	(0.0107)	(0.0141)	(0.014)	(0.015)	**N/A**	**N/A**
Log Per FTE HE State Appropriations			0.00	**-0.014***	0.00	-0.011
			(0.005)	(0.006)	(0.005)	(0.006)
Log Per FTE State and Local Grants for Fellowships and Scholarships			**-0.017+**	-0.014	-0.014	-0.010
			(0.010)	(0.010)	(0.009)	(0.011)
High School Survival Rate			**0.002+**	**0.002+**	**0.002+**	**0.002+**
			(0.001)	(0.001)	(0.001)	(0.001)
Log Median Income (Real 2014 Values)				**-0.147+**		-0.148
				(0.083)		(0.086)
Log State White				**-0.380*** **		**-0.332** **
				(0.070)		(0.084)
State Fixed Effects	X	X	X	X	X	X
Year Fixed Effects		X	X	X	X	X
State Controls			X	X	X	X
R2 (Within)	0.050	0.169	0.209	0.276	0.226	0.290
Observations	374	374	374	356	374	356
States	22	22	22	21	22	21

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robust std errors in parentheses; errors clustered by state

Summary of Difference in Differences Results

Results of this study indicated that a change to a CCB policy does not have a statistical or substantive impact on six-year graduation rates for students of all races or for Latinos. These results did not support the study hypotheses, which predicted a positive relationship between states shifting to a CCB policy and six-year graduation rates for both groups. As for effect on total undergraduate enrollment in public four-year institutions, the fixed-effects regression

results showed that a change to a CCB policy has a positive impact on total undergraduate enrollment for all students. But this impact loses significance when the model includes specific state time trends. It also pointed to a positive effect on Latino undergraduate enrollment in public four-year institutions, but this relationship was not statistically significant. These results, therefore, did support the study hypothesis regarding enrollment of all students, but not the hypothesis on Latino enrollment. This result suggests that the policy is related to graduation only through its effect on enrollment, but only if higher enrollment transforms into higher graduation rates, which is not evident in the results of the graduation models. It appears that allowing a CCB policy is not achieving the intended goals of policy makers to increase enrollment in a way that increases degree completion. Although a CCB policy seems to offer an appealing way to solve the economic, ideological, and demographic pressures adopter states face, it may not be the best resolution, especially if the goal is to increase degree completion.

CHAPTER V

Discussion, Implications and Conclusion

This study set out to explore the relationship between a state's adoption of a Community College Baccalaureate (CCB) policy and higher education completion rates in that state with a specific focus on Latino students. The results suggest that a shift to a CCB policy does not directly correspond with an effect on public institutions six-year completion rates in adopting states, neither for students of all races nor for Latinos. The findings of this study suggest that the adoption of a community college baccalaureate policy contributes to the goal of increasing college attainment in adopting states, through a positive effect on undergraduate enrollment in public 4-year institutions, albeit to a moderate degree. It shows that this effect is even more modest for the enrollment of Latino students. The underlying impetus of this study is the recognition that this policy represents a divergence from the accepted traditional structure of higher education in the U.S., which differentiates the missions of community colleges from those of four-year institutions. Therefore policy change most be tied to a compelling rationale.

The adoption of CCBs is an interesting policy experiment because it appeared to offer a reconciliatory solution to the seemingly contrasting preoccupations of state governments. CCB policies have been argued as a way to promote educational offerings and completion rates while at the same time reducing costs to students and justifying lower state funding investments. The results however indicate that the CCB policy do not achieve all of these. A CCB policy is not linked to enrollment increments of Latino students and it does not have an effect in graduation

rates. In this chapter, I will discuss the theoretical and practical implications of my findings, offer some suggestions about how to improve the policy, and offer paths for future research.

CCBs Policy and Undergraduate Enrollment in Public 4-Year Institutions

A clear understanding of the extent to which CCB policies affected undergraduate enrollment in participating states is important because a CCB policy tries to resolve several issues of access to 4-year degrees affecting place-bounded students. This study assumed that a CCB policy change would increase the overall undergraduate enrollment in adopting states. This assumption was clearly linked to the espoused reasons of CCB policy supporters to improve access. This dissertation finds a positive, albeit statistically weak, effect on the policy adoption and total undergraduate enrollment in public 4-year institutions. These results suggest a positive relation between the policy shift and undergraduate enrollment for all students.

These findings are consistent with Manias (2007), who evaluated the impact of community college teacher education programs in Florida by focusing on capacity and access. Manias found that a CCB policy could expand the access capacity of a higher education system. While this study confirms Manias findings, it also advances his contributions. Manias (2007) speculated that there was a strong possibility that CCB policies only redistribute baccalaureate-seeking students from public four-year institutions to CCBs. The results of this study call into question this conjecture. According to the enrollment model results, allowing community colleges to provide their own baccalaureate degrees maybe associated with an increase in the total undergraduate enrollment in public four-year institutions in adopting states. If a CCB policy had only a redistributive effect, this effect would be null or negative.

It is possible that the enrollment model is measuring a redistributive effect from the private sector, to the public sector. However, the trend line analysis of undergraduate students

enrolled in private institutions in adopting states (appendix B.15) has been almost constant during the analytical period without providing an indication of such effect. Additionally, previous research found no evidence of a redistributive effect from the private sector to the public sector (Daun-Barnett, 2010; Porter Et al; 2104).

The results of this dissertation shed light into the possible reasons behind the lack of redistributive effects from private to public sector that CCB scholars have left unexplained. This study found a strong negative relation between enrollment and in-state tuition and fees for public 4-year institutions at adopting states (Table IV.1). This relation indicate that small increases in price of educational offers deter enrollment in adopting states. The descriptive statistics also show that adopting states have lower per capita income (Table IV.1). Therefore, it could be more difficult for families in these states to afford private education that is, in average, more expensive that public education. Thus, it is probable that by moving into a CCB policy, state policy makers are indeed responding to the need of expanding access to the baccalaureate degree to students who are bound to their location, and that may not afford private education.

Another assumption of this study was that a CCB policy change would have a positive impact on the enrollment of Latinos in public universities and colleges. This supposition tested the logic that because this policy affected community colleges then it would affect positively underrepresented students that enter higher education through these institutions. However, there was no evidence of a statistical significant positive effect of a shift into a CCB policy and undergraduate Latino enrollment in public four-year institutions. Although the policy has a positive effect on all students, the effect is different for Latinos. It is puzzling that a CCB policy does not affect Latino enrollment in four-year public institutions. Literature has found that Latinos are more likely to enroll in higher education institutions that are in short distance from

their homes (Crisp, Taggart & Nora, 2015). Therefore, it is easy to assume that these "place bound" students whom CCB would serve, are Latino students.

This lack of effect on Latino enrollment is consistent with Park et al. (2016) who found that the diversity on teacher education programs in Florida had diminished after the implementation of a CCB policy. It also supports Gandara and Cuelllar (2016) who found that in California half of new CCBs disproportionally serve White and Asian students (more than fifty percent). Gandara and Cellar (2016), explain that to achieve geographic representation, these programs were mostly implemented in counties with a majority White population. Furthermore, they argue that the programs selected to offer a bachelor's degree might not be attractive to underrepresented students because they require strong STEM preparation that underrepresented students simply do not receive in the K-12 system.

Another consideration could be that perhaps Latinos are not enrolling in four-year degree programs after a CCB policy because of the time to degree involved in completing a bachelor's degree. Latino median household income is at least 20% below the National average and this has not changed for at least 20 years (Semega, Fontenot and Kollar, 2016). Thus, it is possible that for Latinos the relative cost of going to college instead of working may be more pronounced because of economic needs or family expectations. Human capital theory explains that years of schooling have a real opportunity cost (Becker, 1994). When individuals delve their time to study, they relinquish the earnings they could be making if they utilize instead that time for working (Becker, 1994). CCBs demand at least two to three additional years of each individual's time, than an associate degree would require. That demand of extra time could be a deal breaker for many people who cannot forgo the earnings during the additional period. Offering baccalaureate programs that do not provide an associate degree as a mid-point credential that

enable students to work could be deterring Latinos from enrolling in these new offerings. Further research is necessary to understand better the reasons why Latinos are not enrolling in these programs regardless if they are offered in community colleges.

CCBs Policy and Baccalaureate Graduation in Public 4-Year Institutions

The next objective of this dissertation was to understand to what extent CCB policies have affected degree completion rates in participating states. To this regard, this study formulated a hypothesis that CCB policy change will have a positive effect in the graduation rates for all students and for Latinos. The suppositions aligned with the espoused goals of the CCB supporters to create these programs and meet local workforce needs of baccalaureate professionals. The hypothesis on Latino graduation rates explored the taken for granted expectation that Latinos degree completion will increase with a CCB policy change because community colleges are the entry point to higher education for this population. Contrary to these expectations, this project found no evidence of a statistically significant or substantive effect of the shift to this policy on graduation dates for either group. The changing sign of the coefficient of the policy did not suggested a clear relation between graduation rate and a CCB policy may be neither.

Up to this point, the CCB literature is inconclusive about the effect of a CCB policy on degree production. The results in this research are incongruent to some previous CBB research and similar to the findings of others. Bemmel (2008) found that community college baccalaureate programs were equally effective as universities in graduating their baccalaureate scholars in Florida. Daun-Barnett (2011) found that allowing community colleges with the authority to confer the nursing bachelors in Florida, Indiana, Louisiana, Nevada, Utah and

Washington increased the production of nurses beyond rates of growth in other states. In contrast, Porter et al. (2014) found that a CCB policy had no effect on augmenting the production of teacher education degrees within adopting states. However when the investigators separated Florida as a case study they found a definitive increase in the number of teacher education degrees in that state. Similarly, Park et al. (2016) found that a CCB policy did not affect the number of nursing degrees within adopting states when they analyzed adopter states as a group. However, when they analyzed Florida as a case study, the policy had a positive effect on the number of nurses produced by that state.

Park et al. (2016) also found that in Florida the number of degree completion increased but less proportion of Latino and Black students where receiving these degrees after the implementation of the policy. They speculate that Latino and Black students preferred CCBs nursing programs over university ones, and that decision could be diminishing their chances of graduating. The enrollment results of this dissertation may offer a complementary view. It is possible that students of color are not enrolling into these new programs in larger numbers now that the system has a higher capacity reducing in turn the diversity of the programs. The problem then would be also in recruiting underrepresented students into these programs.

Park et al (2016) speculation however along with this dissertation results could be affirming scholars' cautions against the CCB arguing that community colleges may be overloaded with this new task (Jenkins, 2015, Townsend 2005). This dissertation argues that policy makers adopt a CCB regulation to eliminate the need of synchronizing the activities of community and four-year colleges, and the problems that might arise during the transfer process (Floyd, 2005). By this rationale, policy makers assume that eliminating the transfer process will increase graduation outcomes of students already studying in community colleges and who

aspire to obtain a bachelor's degree. For this expectation to be true, community colleges that decide to provide baccalaureate degrees need to have the technical capability to enroll, retain, and graduate students in bachelor's programs, thus improving graduation rates.

The combined results of the enrollment and graduation rate models suggest that students are entering CCBs but this is not translating to higher graduation rates. These results raise questions about the ability of CCBs to develop the technical capability of graduating students in their CCB programs once they enroll. Structural capabilities such as the effectiveness of advising departments (Barh, 2008) or faculty-students interactions after class have been linked to the community colleges to graduate their students (Tovar, 2015). These are examples of a structural issue that community colleges may not be able to overcome when transforming into CCBs. Thus, more research needs to be done in regards how CCB modify services that help students succeed in attaining a baccalaureate degree.

It is also reported that community colleges have the lowest rates of funding per full-time student (Carnevale and Strohl, 2013). Funding-per-student level is an important, yet difficult to change, factor that may influence students' attainment (Ortega et al., 2013). CCB researchers have documented that CCBs receive less funding than other state universities to provide for this service (Bemmel, 2008, Botffort, 2011; Gandara and Cuellar, 2016). They have also cautioned the negative consequences of this differential funding. The results of the enrollment models along with the graduation models point to the possibility that this change in policy could indeed be charging community colleges with more responsibility when they are already underfunded making it difficult for these institutions to graduate their students (De Los Santos & Cuamea, 2010; Mulnix, Bowden, & Lopez, 2002; Santiago, 2011).

The findings in this study suggest that the coordination amongst the two systems in higher education through the transfer processes may not be the focal problem that increases state graduation rates. Thus, perhaps the real hurdle to graduation is inside the entities in charge of graduating these students and not in the connection amongst two year and four year institutions. The results then hint to a much more concerning issue. CCBs like many other universities serving underrepresented and low-income students are failing to graduate the majority of their students because they may not be well attuned to these population needs.

The design of this study offer other probable explanations to its findings of CCB policy and graduation rates. Contrary to previous research, this dissertation utilized graduation rate as a measurement for graduation. In contrasts, Bemmel (2008), Daun-Barnett (2011) and Park et al. (2016) utilized the number of bachelor's degrees as graduation indicators and they focused their research on specific programs. It is possible that the overall graduation rate of public four-year institutions in the state is not the best indicator for measuring the impact of a CCB regulatory change because six-year graduation rates exclude bachelor's degrees obtained by transfer students. Some students enrolling in CCB programs do it counting with an associate already from the same field and they return to study to advance their careers. It is also possible that some students are transferring to these four-year programs from other community colleges. Utilizing graduation rates exclude the degrees obtained by these students. It could be possible that utilizing another graduation indicator, such as the total number of bachelor's degrees provided by public four-year institutions in a year, could yield different results more aligned to previous findings.

Moreover, the average six-year graduation rate utilized in this study did not focus on specific programs. The mean of all graduation rates in all fields could be diluting the effect of a

policy that is commonly designed to allow community colleges to confer bachelor's degrees in only specific fields. Thus, there is the possibility that the policy is effective in improving the graduation rates for specific fields, but not the average graduating rate of all fields.

Another consideration is that perhaps evaluating a CCB policy as a "state level" policy is not a correct assessment. CCB literature demonstrates that many states confine their policy to a few community colleges and specific programs. There is the possibility that the institutions that were allowed to provide certain bachelor's degrees are indeed graduating students and that the policy may be successful, but this success might be overshadowed by asking this institution to increase graduation rates for the entire state. Hence, a state policy that has mostly local consequences such as this one might need evaluation designs that are also localized. The effects of the policy on graduation rates could be different if the unit of analysis for the evaluation captures the "local" nature of this state policy.

Theoretical Implications

This dissertation conceptualized the CCB phenomenon as a regulatory change at the state level that allows community colleges to expand their mission into providing and conferring baccalaureate degrees. Under this conception, it explored theoretically reasons, goals, and assumptions of a CCB policy. The following section discusses this conceptualization on the light of the study results.

Proclaimed rationales for this shift are commonly framed under a public interest understanding. A CCB policy is adopted to respond to the needs of the students in their localities and correct a market failure in which neither student nor industry demands are satisfied by the given provision of higher education institutions offering baccalaureate degrees. The descriptive

results of this dissertation support that adopting states may be responding to increasing student demand for affordable ways to obtain a bachelor's degree, but this policy may not meet the needs of the most needed students. The trend analysis depict how from 2001 to 2013 general economic conditions have left state governments and families with fewer resources to support education especially after the recession in 2007. The results also show how adopting states have larger demographical pressures to expand access than non-adopter states and less flexibility to use the private sector to accommodate more students. Thus, adopting states face real demand pressures for affordable bachelor's degrees.

However, the results also show that all states face similar ideological trends during the analytical period. That is, a framework that emphasizes a market logic and promotes the diminishing of governmental intervention to fix market failures. Guided with this logic the results show that from 1990 to 2014 state governments have declined their financial support to higher education around 40%. A the same time, the results illustrate a steady growth in tuitions and fees at public institutions in both adopters and non-adopter states suggesting that public institutions have responded to this reduced support embracing the market logic and using market tools such as price to increase diminishing revenues.

The results also indicate that institutions in adopter states may not have the opportunity to increase tuition and fees at the same pace that institutions in non-adopter states because individuals in adopter states have less per capita income in turn less purchasing power. Additionally, the enrolment model found that in adopting states small increases in price would decrease enrollment in large numbers. Under these restrictions, legislations have incentives to increase the affordability of a bachelor's education. These same constraints, however strongly incentivize institutions at adopter states to seek for other alternatives besides pricing to create

revenue such as entering in new markets or increasing market share. Consequently, the descriptive results suggest that creating revenue is a plausible but unspoken rationale for this policy change.

These results advance current literature about the CCB because researchers usually highlight market forces driving this change under a public interests lens as the need to uncap industry bottlenecks not as the way to create a revenue stream. Creating revenue for individual institutions and ensuring their survival is more aligned to a special interest rationale. Historically, colleges and universities have a government-protected monopoly on students seeking baccalaureate degrees (Dougherty, 1994a). The possibility of community colleges advocating for legislative change because it allows them to enter into new markets and increase enrollment revenue under the described conditions is strong. Thus, the results support a special interest theory view of this regulatory change highlighting the unspoken purposes a CCB policy such as the search for profit.

The results of this dissertation also uncover some of the limitations of a special interest theory explaining the CCB phenomenon. An underlying logic of special interest theory is that the market is fixed and entities lobby regulators because a regulation will create a "zero sum game" scenario among those in favor or against the new regulation. In the case of a CCB policy, powerful interest groups such as private universities, four-year colleges, and university branch campuses lobby against this policy change (Remington & Remington, 2005; Rudd et al., 2010; Thor & Bustamante 2013). The latent logic of this opposition is that the baccalaureate market is fixed. When more providers enter the market, the share of students will shrink for all institutions along with their revenue stream. However, this lose-win scenario appears not to be the case. The positive association of a CCB policy to overall enrollment in public four-year institutions found

in this study, indicate that allowing CCBs does not take market share from other institutions, but instead a CCB policy expands the market for baccalaureate degrees to a student population that was outside the market before the policy modification. The positive effect defies a lose-wing conceptualization of the CCB phenomena because the results suggest that a CCB expands the market instead of shirking it. Future research should investigate if this expansion is because of the increased affordability of bachelor's degrees or it is more related to the location of CCBs. Therefore, we can understand better to whom CCB policies are expanding the system.

The CCB policy's lack of influence on Latino enrollment also strengthens a revenue seeking rationale and further question the public interests framing of this policy. The descriptive results highlight that Latino's are driving the population growth especially in adopter states. Latinos are also more likely to enroll in higher education institutions that are in short distance from their homes (Aborna & Nora, 2007). Thus, they should be enrolling in CCBs but this is not apparently the case.

CCB institutions could be catering baccalaureate programs to attract place-bounded students who can pay higher price than the price regular Latino students can afford. In average, the median income of Latino families is 42% lower than Asians and 27% lower than Whites families (Census Bureau 2016). Thus, Latinos maybe left out of these programs through pricing. Opponents of a CCB policy have long argued that community colleges complying with accreditation requirements and responding to the intensive changes required to offer this new service could gradually raise tuition and admissions standards. Many underprepared and underprivileged people could fail to meet these standards and loose the opportunity attend these colleges (Jenkins, 2015, Plecha, 2007; Townsend 2005). What is intriguing; however is that my

main results do not find a relation between Latino enrollment and tuitions and fees. Therefore, more research is necessary to find out deterrence factors for Latinos to enroll in these programs.

Theoretical Implications about Graduation Rates.

The results of this dissertation revel how in practice it is very difficult to implement changes in the higher education system that reconcile several public needs related to different political ideologies. Higher education policy-making reflects differences in what it is considered "public interest". Conservatives are usually concerned with the efficiency of higher education and keeping education costs down, and liberals seem less concerned with efficiency in higher education in favor of ensuring equality of opportunity (Doyle, 2007; Doyle 2010; St. John, 2013). In theory, a CCB policy appears to be a redistributive policy aimed to improve educational opportunity to needed students and a distributive policy that addresses industry needs and reduces cost of higher education. This dichotomy of purposes aligns to some degree with liberal and conservative ideologies. By adopting a CCB policy, legislators hope to improve access and attainment rates, trading resources from universities to community colleges that serve primarily low-income students (Dar, 2010). At the same time, policy makers could cut government expenditures by transforming community colleges into baccalaureate institutions while prompting students to enroll in lower-cost institutions (Doyle and Zumeta, 2014). The results of this dissertation suggest these public needs are not all satisfied by the policy, specially the redistributive ones.

The results on enrollment suggest that the CCB programs incentivize enrollment but it may not improve educational opportunity of the most needed students. The descriptive results show that Latino students are still underrepresented in four-year institutions (Figure I.1) and that Latino graduation rates at public institutions are lower than the average rate for all students.

Additionally, Latino families in the U.S. have a median income that is approximately 42% lower than Asians families and 27% lower than Whites families. According to the findings, the CCB policy do not encourage Latinos to enroll in 4 year public institutions at significant numbers. The CCB may expand the access to baccalaureate degrees for some students but not for those who could be considered the most in need.

Additionally the results suggest that a CCB policy does not improve graduation rates for Latinos either. Descriptive results show how Latinos in adopter states have lower graduation rates than the average graduation rates for all students, and that graduation rates for Latinos in adopter states are even lower than the Latino graduation rates for non-adopters. Therefore, the policy do not achieve its second redistributive goal.

On regards to the distributive purposed of the policy, the results of this dissertation suggest that the shift into a CCB regulation does not appear to improve graduation rates at the state level. The possibility exists that the policy does not have an effect on graduation rates. If this is the case, the hopes of legislators to fill the gap of qualified personnel and help industry with more bachelor graduates has not been achieved.

Thus, a CCB policy may only satisfy one of its distributive goals. A CCB policy may be helping policy makers to cut government expenditures by transforming community colleges into baccalaureate institutions while prompting students to enroll in lower-cost institutions (Doyle and Zumeta, 2014). CCB literature documents that (at least initially) legislators approve funding levels for CCB programs during the authorization process of this policy (Botffort, 2011; Bemmel, 2008, Gandara and Cuellar, 2016). Thus, legislators achieve this goal a priori in the implementation of the program, regardless if they achieve any other goal. This effect alone could be enticing enough to approve the policy.

Highlighting that a CCB policy may not offer a reconciliatory solution to the seemingly contrasting preoccupations of state governments strengthen the idea that state policy makers and public higher education institutions have been engaging in what Doyle and Zumeta (2014) called the "Grand Bargaining". These researchers argue that for the last two decades policy makers offered more governance and financial autonomy to colleges and universities in exchange of less state funding. Under CCB regulation, community colleges have more autonomy in the types of degrees they can offer. This allows them to compete for bigger segments of the market. The results of this dissertation indicate that a CCB policy does expand the system and provides the opportunity to CCB institutions to enrolling more students. However, the appropriations that community colleges receive to provide these services are lower than those received by state universities (Bemmel, 2007; Bottfford, 2011, Gandara and Cuellar, 2016). The results of this investigation suggest that implementing CCBs allow governments to lower the cost of bachelor's degrees while enrolling students at these lower cost institutions because these institutions receive less state subsidies than state and research universities (Doyle and Zumeta, 2014).

Though a CCB policy may not improve graduation rates, also point to the possibility that the "Grand Bargaining" could have a huge social cost. Within the "bargaining frame", CCBs get flexibility to access new sources of revenue but they forgo funding that could make their baccalaureate programs successful. A CCB policy cannot reconcile less funding with more autonomy if institutions are not graduating their students, especially Latinos. The descriptive findings show that adopter states have higher percentage of Latinos, and these states accommodate higher number of Latinos in their public higher education systems. Adopter states could have the highest impact when mending the inequity in higher education outcomes between Latinos and other demographic groups, and reap the social and economic benefits of an educated

growing Latino population. However, it appears these social benefits cannot materialize under a framework that has a primary focus in cutting higher education cost. For this reason college administrators and policy makers proposing CCBs should purposefully include equity goals when promoting this policy.

According to the results of this dissertation, CCB policies appear to position CCB institutions on the same conundrum that has daunted community colleges since their creation. As community colleges, CCBs are functioning to expand educational access. At the same time, they may be playing a role in the growing stratification of higher education by leaving out many Latino students from enrolling in these programs. Moreover, the results on graduation rates reinforce the suspicion harbored by scholars about the fragility that community colleges have in defending themselves in a political environment that focuses on reducing the cost of higher education. CCBs might be logically searching for more revenue sources to compensate for the declining support of state governments in higher education. However, as they are able to expand their reach, they are accepting funding levels below other state universities offering bachelor's degrees, perpetuating in this way the underfunded problem that they were hoping to alleviate. According to the findings in this dissertation, it is probable that underfunding issues may be affecting the service CCBs provide to baccalaureate seeking students and ultimately their possibility of graduating.

The Effect of other Explanatory Variables in Graduation Rates and Enrollment in Public 4-year Institutions

In regards to other control variables, the statistical model of this dissertation selected variables that mostly represent the state context in which CCBs perform. We included socio-demographic variables, variables representing the K-12 system, and variables indicating the cost

of higher education. With exception of tuition and fees, all these variables can be considered environmental factors over which institutions have no control. The overall results of the enrollment models and the graduation models provide then interesting information about how this environment affects institutional outcomes and the students experience while in college. In the models explaining six-year graduation year in public four- year institutions, none or few environmental variables showed a statistical relation to the graduation rate for all students. In contrasts, in the models explaining enrollment in public 4-year institutions more variables were statistically insignificant and explained some of the variance in enrolment.

These results suggest that, although contextual and environmental variables may have a direct effect on enrollment behavior, they may only have an indirect effect in graduation rates. So environmental changes including state policies may affect when and where students attend to college. However they may not explain what happen once the students attends a specific institution and how this institution interact with these student in a way that advance them towards degree attainment. Thus, a conceptual model seeking to examine state policy may benefit by including another level of evaluation that deals with institutional factors documented as to have an impact on graduation rates.

Environmental factors could have an impact in critical areas of colleges and universities tied to instruction, students' services and the general maintenance of the institutions (Ortega et al, 2015). Focusing in these critical areas may illuminate how the environment interacts with institutional factors that in turn affect graduation rates. For example, Frye (2015) found that during the last 20 years in response to the decline of state appropriations, institutions have changed the composition of their faculty to include higher percentages of part time faculty. These change of composition can change the degree in which faculty interact with students

outside of class and engage in mentoring and advising to promote student success (Umbach, 2007).

Implications for Practice

Policy Design.

In regards to access, the results demonstrate that CCBs may help expand access to education, but they are nonetheless failing to increment educational opportunity for Latinos who have been historically underrepresented in higher education. Attaining a policy change that modifies the structure of higher education in a state, such as the CCB policy, is difficult. Legislators and CCB administrators who design these policies may be losing an opportunity to reduce gaps in educational inequity for Latinos at the local level (Gandara and Cuellar, 2016). This is regretable because Latinos are driving the demographic growth in the country (Rutherford & Rabovsky, 2014) and bachelor's degrees have a dramatic impact on the earning potential for individuals and the future economic well-being of the nation (Ortega et al., 2013). The results of this dissertation indicate that leaving equity considerations as an afterthought when designing CCB polices may have real consequences including creating programs that do not meet the needs of underrepresented students and that do not encourage them to enroll in these programs (Gandara and Cuellar, 2006).

The fact that the policy is able to affect enrollment for all students shows that the policy has the ability to modify enrollment behavior in a positive way. Therefore, a CCB policy designed with more attention to enrolling Latino students could have a similar result of expanding educational offerings to this growing population. Easy considerations such as strategically placing CCBs in counties with large Latino populations could provide a bust in

Latino enrollment (Gandara and Cuellar, 2016). Legislators truly concerned with providing more opportunities to underrepresented students should purposefully lobby to locate CCBs programs near high-density Latino populations.

Legislators should work with CCB administrators to establish tuition and fee levels to promote Latino student entrance. As it is, it is probable that CCBs make baccalaureate programs more affordable for higher number of students. However, the average Latino household income is the second lower in the nation in comparison with other ethnic groups (Semega et al. 2016). CCB policy designers should take into account the price/enrollment elasticity for Latino students to obtain information in what tuition levels for CCB programs will price out these students from enrolling in these programs.

At the institutional level, the bottom up nature of the policy gives college administrators a rare opportunity to advance educational equity at the state level if they were to design these programs with explicit equity considerations in mind before they submit them for governmental approval. The question of how this policy could affect Latino, African American and other underrepresented students groups should guide the selection of programs, the structure of the programs, and the planning of program implementation and administration.

Administrators designing the programs should become knowledgeable of factors that deter enrollment and degree completion for Latino students and design CCB proposals that activities to overcome the factors. For example if the decision is to focus on STEM type of bachelors programs institutions should include academic support components such as bridge programs that bring up to par underrepresented students in math and science, writing skills, computer programs skills before they start their semesters. CCBs could also offer credited remedial science courses.

For example, knowing the possibility that Latinos may be deterred from entering CCB programs that lock them in four or more years without giving them an associate degree that enables them to work by the middle of the program, should guide institutions' design of the curriculum and educational goals of CCB programs so as to avoid this pitfall. These internal decisions are usually made before the community colleges enter the political arena to obtain permission to confer baccalaureate degrees and are features that benefit other students too, so they could be easily justified.

Policy Implementation.

This study suggests that there may be a disconnection between policy makers' rationales to promote and approve CCB policies and the effects of the policy especially on graduation. It is possible that the lack of connection is related to the role state government play in this reform. Governments who approve and fund these programs and then detach themselves from policy implementation, leave institutions to fend for themselves on how to make this policy successful. This detached role may be creating an incomplete policy implementation process where government and institutions do not work together to promote the success of the CCB policy goals and jeopardize the benefits state governments and students may rip from it.

CCB policies are new to the states and institutions that are implementing them. They could be considered pilot policies that need refinement to resolve important long-term societal issues. Including a refining process as part of the authorization of these programs could help state governments and institutions to identify and resolve problems that may impede the success of the policy. Governments could fund and support independent organizations to work with CCB institutions in this refinement (St. John & Musoba 2006).

The long-term nature of the goals of a CCB reform, uncapping bottlenecks and improving educational opportunity forecast that institutions might have to engage in a learning cycle that modifies how CCBs could keep advancing towards intended goals (St.John, McKenney and Tuttle, 2006). This dissertation identified two of these challenges. Translating enrollment into degree completion and promoting the participation of Latino students. Both challenges are critical issues that would require an action inquiry process that explores why these challenges exist in first place (St.John, et al., 2006). The independent research organizations could help CCB institutions build an understanding of these challenges, look internally and externally for possible solutions, evaluate options, develop of action plans, implement these plans, evaluate results and reengaging again in the organizational learning cycle (St.John, et al., 2006). As part of a CCB reform, governments could facilitate these intense and time-consuming processes through funding for research organizations, and providing collaboration during this process. Including a process of organizational learning to identify challenges that may appear along the way the successful implementation of the program is especially important now that large systems like the Californian one are implementing CCB programs at large scale and have the potential to affect growing numbers of students. Focusing on student success should be a primary goal of CCB programs and organizations and government representatives should engage in organizational learning processes that support this endeavor.

Policy Assessment.

The results of this research suggest that within nineteen CCB adopting states, the effect of the policy improved access but did not affect graduation rates. However, other researchers have found a positive effect on graduation in states that have implemented this policy more broadly across many community colleges (Daun-Barnett, 2010; and Park et al., 2016). They

suggest that the scale of implementation of the policy may be contributing to the ability to measure a successful effect. This reasoning may also be pointing to an underlying mechanism that can affect the success of this policy at the state level: the scale of implementation of the policy itself. A state policy that is looking to affect graduation rate outcomes at the state level should also be formulated to be implemented in several community colleges in the state, and not only in a select few.

A CCB policy implemented at a higher scale could be more efficient in achieving states' graduation objectives than a CCB policy implemented in a few and selected programs. Scholars interested in community colleges have called for ambitious reforms that concern the entire college student experience. They argue that reforms that focus on only one stage, such as remediation or counseling for course selection, will have, at best, only modest effects (Dougherty, 2001; Barley, 2012). The CCB is a bold reform concerned with the student experience above and beyond the traditional functions of community colleges. This reform, however, could not be achieving the expected effects at the state level because of the scale of the reform.

The pace in which CBB policy is achieved at a high scale combined with the buy in at the point of implementation could be another undelaying mechanism that makes a policy successful. A CCB policy is often designed and attained through a bottom-up process usually initiated by the leaders of specific local community colleges who plan, coalition-build, and lobby for this policy change to impact their localities (McKinney & Morris. 2010; Plecha, 2007; Burrows, 2002). The CCB literature documents that Florida achieved a high scale of implementation following the pace of community colleges interested in offering a bachelor's degree. Accordingly, a CCB policy should open a path for community colleges to obtain permission to confer bachelors'

degrees in a way which allows the community college to be engaged in the design of the policy, from the very beginning of the process and at their own pace.

Recommendations

Based on the findings of this dissertation I offer some recommendations to guide policy efforts and institutional practice to improve CCB impact on enrollment and graduation rates. During the design of CCB policies, policy makers should disaggregate tuition enrollment elasticity analysis for students of different ethnicity and income backgrounds to propose tuition and fees for CCB programs that do not price out low-income students.

Policy makers and state government representatives could also encourage industry representatives that are facing bottlenecks and demanding community colleges to offer baccalaureate degrees to fund and coordinate paid internships for students enrolled in CCB programs. They could also encourage these industry leaders to create scholarships for students of these programs with "pay back" arrangements in the form of time working in their companies. Both recommendations could compensate the cost of opportunity of Latino students deciding to participate in a CCB. Industry state holders would also collaborate in this way in the successful implementation of the programs.

State boards should foster and fund ongoing assessment driven by action inquiry to solve any identified challenges toward the policy goals. Coordinated by external research organizations, action inquiry processes should be done two years after the implementation of CCB programs to identify if there are challenges enrolling underrepresented students. After four years, the inquiry process should focus on student retention. Six years after implementation should engage in action inquiry to identify and solve problems of completion. Established CCBs could start an action inquiry process and identify is there is underrepresentation of Latino

students in enrollment and degree completion. State government agencies can also promote collaboration among institutions to do these kind of projects to share ideas and learn from each other solutions to similar issues.

New and established CCBs should maintain ongoing data creation disaggregated by ethnicity and income levels to identify inequities in the type of students enrolling, advancing and graduating from these programs. CCB program struggling to enroll Latinos should survey their Latino students as to the reasons that they are not enrolling.

CCB staff also could create more sophisticated ways to promote CCB programs that reach the Latino population of their campus, feeder schools and community centers. CCB administrators should work with institutional research offices to identify current Latino students enrolled in their institutions to promote the programs directly to them several times a year. The can also work with Latino communities in and outside of campus to promote these programs and increase their pool of candidates. They should also examine their application and admission standards to CCB programs under the light of the needs and previous preparation of Latino students to see if they need to be modified to promote Latino participation. They could create alternative entrance methods for those students that do not meet entrance standards from the offset to facilitate their future inclusion in these programs and their academic success.

To promote graduation among their students CBB administrators should conduct ongoing formative assessment on the academic achievements of their students. Administrators could including checking points at the beginning of the semesters to ensure students are enrolling back each semester and help students not enrolling to solve issues that may stop them from coming back to school. In the middle of the semester, they could obtain information on the class

performance of their students and work with students falling behind in their grades. Provide them with advice, tutoring and mentoring to help them success in their classes.

CCB faculty should also be open to modify their curriculum to make it more engaging for Latino students and to meet their needs. Conferring an associate degree in the middle of these program and creating partnerships that offer payed internships programs to students that have achieved this milestone could make these programs more appealable to low income students and to those that prefer hands on learning. Faculty should also create classes scheduling that allow students to work while they attend their baccalaureate programs to ensure flexibility for low-income students.

Limitations of the Findings

There are several limitations of this study. Conceptually, this dissertation frames the CCB as a state policy change. As a result, it looks at the CCB phenomenon from a far removed position that offers a very broad view. This wide view may forgo important detail and contextualization that could enrich the understanding of this issue and its effects on student outcomes. The framing of the CCB as a regulation process at the state level could ignore local political processes that may be influencing the decision on how, what and where CCB programs are approved. For example, there could be proposals trying to locate CCB in counties with high Latino population density, but other local processes stop them from even achieving the state's board for approval.

Another limitation is that this study conceptualized equity as improving college participation for students historically underrepresented in higher education (St. John et al., 2018). This could be especially problematic because the CCB policy could be framed as a policy that improves affordability to attend college and thus improving equity. However, the

operationalization of equity as Latino ethnicity may undermine the benefits of the policy. One more drawback of the study is that it groups Latinos as one monolithic group connecting it closely to low socioeconomic status. However, there is considerable heterogeneity among Latinos differing as regards to income level and many other characteristics such as their families' country of origin, history in the United States, assimilation experiences and many other cultural and sociological characteristics that shape their educational success.

Conceptually this study also shrinks "educational success" to enrollment percentages and graduation rates without taking into account the experiences acquired during the educational process that could be enriching students attending CCB programs. Along these lines, this simplification does not allow an examination of equity regarding the quality of education that students receive in different type of institutions. Critics of this policy argue that CCB programs could marginalize already underserved students to lower quality baccalaureates programs (Jenkins, 2015, Townsend 2005). As a consequence, CCB graduates would have lower chances to compete for employment opportunities against graduates from other more prestigious universities perpetuating in this way labor market inequities (Jenkins, 2015, Townsend 2005).

For analytical purposes, the study grouped 50 states into two crude groups' adopter and non-adopter states. However, both groups are composed of states that differ greatly from one to another. This level of analysis simplifies the complexity of state policy. It lump sum the goals and expectation governments have for CCB policies and how these are linked to very specific state's characteristics, structures, polices and processes. In addition, the design of a CCB policy may be different in different states, and this could affect how the policy function in each entity. Individual state-level policy considerations might provide more sophisticated insights to the CCB phenomenon.

Additionally bisecting states as adopters and non-adopters, maybe generalizing characteristics that may not be present in all members of each group. The findings could be over estimating some issues for some states, and underestimating some issues for others. For example is it possible that a non-adopter state has high percentage of Latino population, enroll large numbers of students in private institutions and have less Latino percentages in their public education systems.

The operationalization of degree completion as the average graduation rates for each state may be also problematic. In reality, the majority of CCBs are approved with specific target disciplines in mind. Consequently, aggregating graduation information for all disciplines into one general graduation rate could be diluting a positive effect of the policy. Focusing in specific disciplines could be a better way to measure graduation the effects of the policy

Similarly, the operationalization of a CCB policy as dichotomous variable may be underestimating the effect of the policy on enrollment and graduation results. The variable treats the adoption of this policy as a change that affects all of its community colleges and four year institutions in the state when in reality; the opportunity is limited to specific institutions. Individual CCBs maybe succeeding in graduating students and enrolling Latino students. However, these gains could be lost when we add these numbers with all other four-year public institutions in the state.

The robustness checks of the study indicate that the results of the models are sensitive to the specification of the sample. Using different combinations of states as the control and treated group can change the results of the effects of this policy. This dissertation only included one robustness check running the models only with adopter states. However, other combination of

treatment and control groups could be done in the future to stablish with more certainty about the reliability of the findings.

This research also adds tuition and fees as a proxy of pricing for higher education however, there are many other cost of attendance that could be affecting how Latino students are selecting their enrollment into CCBs. Also some states have opted to freeze tuition but institutions compensate with increments in the fees of the programs. It would be interesting to examine how tuition and fees effects on enrollment separately.

Future Research

The findings of this study raise a number of conceptually important questions: Under a market framework that focuses competition for revenue; is it possible to possible to design and implement higher education policy in ways that increase the educational equity of most students? By participating in the grand bargaining, are higher education institutions merely responding to environmental reductions of income? Or are they embracing market logics that push for policies that focus on revenue instead of policies that reposition higher education as a system that increases the human capital of the nation and their local communities? Can we reframe accountability and reform implementation as a collaborative process that involves action inquiry instead of a punitive system against higher education institutions? These theoretical questions are already driving the research higher education scholars conduct but this investigation reaffirms the importance of their constant consideration.

The findings also invite us to think about other more focused questions such as why it is that a CCB policy doesn't not show a clear effect in graduation when it is capable of modifying enrollment? Given the limitations of the study, the first inquiry should be testing the

inconclusive results that CCBs does not increase baccalaureate completion. Researchers should use different approaches to test the effect on graduation.

Individual state case studies could help sophisticate and contextualize the CCB policy and its effects in student outcomes. These should include a summary of their unique histories, structures, ideologies and political preferences as well as the evolution of their higher education public policy environment may have importance when understanding the impact of CCBs in a state. Florida has been highly contextualized so focusing in other states could give us comparison points on how a CCB policy works different in a different state context. Researchers could inspect trends in state policy and related outcomes to provide a way of viewing the relationship between policies trends, the CCB policy and achievement outcomes.

Another avenue for research could be to redefine comparison groups among states that have very similar characteristics but that use different strategies to promote baccalaureate completion including CCBs. As well, refining success measures to represent specific fields and majors could be beneficial to advance our understanding of this phenomenon.

This dissertation along with previous research points out that the degree of implementation of this state policy varies considerably amongst states. Some states allow eleven community colleges to offer bachelor's degrees, while other states only allow one or two. The suspicion is that the real effect is too small to change numbers at the state level. Hence, the researcher should explore CCB policy effects by reflecting upon its focal/local nature. One way to improve evaluation designs could be to focus on the institutional level. Lowering the unit of analysis to the institution could help measure the effects of a policy intended to affect only a couple of institutions and not the entire state. Researchers could develop comparison groups that resemble the community colleges implementing these programs from other universities offering

similar programs as the CCBs and which are located in the same state. If CCBs produced similar percentage of baccalaureate in the designated fields, then the policy could be deemed successful.

Another avenue for research could compare counties or cities in states that have shortages of workers. Comparing counties that implemented CCBs against counties that implemented other baccalaureate delivery alternatives like university centers and 2+2 plans in the same state could give us information on how a CCB fares against other alternatives.

Another option could be to create an indicator that better reflects the scale and scope of the CCB policy in each state. Focusing in specific fields could be a way to capture the real scope of the policy effect of these programs so maybe indicators should be created for specific majors. This dissertation used as an indicator a dummy variable that turned on as soon as the state adopted the policy, and off the years that it did not. As previously mentioned, this indicator does not accurately represent the scale of the policy. Although useful to mark the intervention and create before and after testing conditions, this dummy may underestimate the effectiveness of the policy because it artificially gives the appearance that all community colleges in the state have the opportunity to implement these programs in their campuses. In reality, the opportunity is limited to specific institutions. Researchers could design an indicator that captures this nuanced scale in each state and see how that affects the policy intended outcomes.

Further inquiry is needed to illustrate how this policy affects underrepresented students. There are only three studies that have focused on analyzing this policy and its impact in these terms. All of the findings, including the ones in this dissertation, point to the lack of effects on the educational outcomes of underrepresented students. At the same time, the same studies found positive effects on populations that are not underrepresented. Therefore, exploring the reasons for these differential effects is very important, especially because this specific policy can keep

disseminating along states under the assumption that achieving, efficiency goals and cost controls can be done at the same time it achieves equity in educational outcomes.

Researchers interested on the effects of CCBs should keep disaggregating numbers to see differential effects for different groups. This could uncover unexpected relations and could help redesign policy in better ways. Measuring CCB effects on enrollment of underrepresented groups should also be included as CCB policy evaluation outcome. The combined information can help us to understand how underrepresented students are being served by these new programs. To make a more inclusive representation of underrepresented groups researchers could select CCBs in states with high populations of American Indian students, African American, Latino and Asian students and explore the ethnic representation of students enrolled at CCB.

Further research is necessary to understand better the reasons why Latinos are not enrolling in these programs regardless if they are offered in community colleges. Investigators could design qualitative projects to understand how Latinos make decisions on whether or not to enroll in CCBs. This data could inform future community college leaders that are seeking to provide bachelor's degrees about the considerations that they should have in mind if they truly want to serve Latino students with their new programs. In this way, administrators can take provisions during the lobbying and implementation of this policy to advance equity goals and not take them for granted.

Quantitative projects could also identify what are the main challenges enrolling Latinos. Is it a problem with the location of these programs or the kind of programs (Gandara and Cuellar, 2016)? Is it the tuition and fees of the programs? Researchers could explore the location hypothesis creating a database with the addresses of CCBs (IPEDS) and with county or township demographic information (CENSUS) and analyze it through Geographic Information Systems.

Similar analyses could be done to identifying issues of pricing, researchers could estimate the relation of CCBs tuition and fees to the average median income of families in these counties.

Another interesting study could analyze the structure and curriculums of the CCB programs, code them by their main characteristics and compare this information with the number of Latinos enrolling and graduating of these programs. This project could identify CCBs successfully enrolling, retaining and graduating Latino students and create individual case studies to record student experiences in CCBs, institutional information, curricular information, and program services and document best practices that maybe supporting Latino success.

More research is needed to explore the relation between the transfer process and CCBs. Researchers could design qualitative research projects to document the experiences of students in a CCB program and students that transfer to similar programs at state universities. Comparing the experience of both groups of students could provide more detailed information about the relation of the transfer process and graduation rates. Overall, more research needs to be done in regards how CCB modify services that help students succeed in attaining a baccalaureate degree.

Future research should investigate if this expansion is because of the increased affordability of bachelor's degrees or it is more related to the location of CCBs. So we can understand better to whom CCB policies are expanding the system.

Conclusion

For many racial and ethnic minority groups, college completion rates are lower than the national average. Closely related to preoccupations about educational attainment is the concern for the decreased affordability of higher education. The loss of higher education affordability has brought to the forefront the pressing need for more scholarship on the political and ethical dimensions of higher education policy in our collective effort to address concrete problems,

especially in difficult economic times (Dar, 2014). The current economic and political environment has placed added pressure on postsecondary systems to produce graduates at a higher rate, while at the same time reducing the cost of their services (Combs, 2014; Conner and Rabovsky, 2011).

For the last two decades, state governments have designed policy innovations aimed at improving both the performance and cost effectiveness of public institutions (Cornner & Rabovsky, 2011; St. John et al., 2013). Policies allowing community colleges to confer their own baccalaureate degrees is one of these innovations. Although the implementation of this policy has been widely studied, few studies focus on its impact on educational outcomes for Latino students. This results in a serious gap in our understanding of how state policies that affect the structure of higher education either decrease or escalate the inequity in higher education attainment that currently exists across demographic groups (Perna and McLendon, 2014).

In this dissertation, I explored how shifting into a CCB policy influences enrollment and graduation rates at pubic four-year institutions. This study found that adopting a CCB policy has a positive effect on undergraduate enrollment for all students in public four-year institutions. It also indicated that the policy has a positive relation with the enrollment of Latinos, but without being statistically significant. This study also found that a shift in the policy did not yield any effect on average six-year graduation rates, for Latinos or for all other students.

The use of a CCB appears to be efficient in reducing the cost of offering baccalaureate education, which is the probable intention of public officials. Reducing this cost, however, comes at a price: the inability of these institutions to graduate their students at numbers that influence state outcomes. Critics of this policy have expressed concern in charging community

colleges with more responsibilities, while state governments continue to reduce funds to support all other community colleges (Jenkins, 2015, Townsend 2005).

Findings from this dissertation should be considered as scholars and policy makers explore the claims and demonstrated benefits of efficiency, which may come at the expense of providing greater access and equity for students. It is clear that we need to encourage discussion about how to create policies within a seemingly permanent market oriented ideological framework while at the same time tackling educational disparities for groups that are driving population growth in this country.

APPENDICES

APPENDIX A

Variables Description

Table A. 1 Mean of Share of Latino Population by State, 1990-2014

State	% Latino	State	% Latino
Alabama	2%	Montana	2%
Alaska	5%	Nebraska	6%
Arizona	26%	Nevada	20%
Arkansas	4%	New Hampshire	2%
California	34%	New Jersey	14%
Colorado	17%	New Mexico	41%
Connecticut	10%	New York	15%
Delaware	5%	North Carolina	5%
Florida	18%	North Dakota	2%
Georgia	6%	Ohio	2%
Hawaii	8%	Oklahoma	6%
Idaho	9%	Oregon	8%
Illinois	13%	Pennsylvania	4%
Indiana	4%	Rhode Island	9%
Iowa	3%	South Carolina	3%
Kansas	7%	South Dakota	2%
Kentucky	2%	Tennessee	3%
Louisiana	3%	Texas	33%
Maine	1%	Utah	9%
Maryland	5%	Vermont	1%
Massachusetts	7%	Virginia	5%
Michigan	3%	Washington	8%
Minnesota	3%	West Virginia	1%
Mississippi	2%	Wisconsin	4%
Missouri	2%	Wyoming	7%

Table A. 2 Variable descriptions and sources

Variable	Description	Source
State	50 U.S. states NOT including the District of Columbia or Puerto Rico	Delta Cost Project Database from IPEDS Institutional Characteristics
Year	The period of time generally extending from September to June; usually equated to 2 semesters or trimesters, 3 quarters, or the period covered by a 4-1-4 calendar system. Academic year is displayed as the end year (i.e. academic year 2015 includes data for 2014-2015).	Delta Cost Project Database from IPEDS Institutional Characteristics
State Average Six Year Graduation Rate for Latinos in Public 4-Year Institutions	Average rate for Latinos in Public 4-Year Institutions (Sector 1). First time, full time, degree/certificate seeking undergraduates and tracks for 150% of the normal time of their program.	HEGIS-IPEDS Ozan-Parra Database from IPEDS Graduation Rates
State Average Six Year Graduation Rate for All Students in Public 4-Year Institutions	Average rate for all students in Public 4-Year Institutions (Sector 1). First time, full time, degree/certificate seeking undergraduates and tracks for 150% of the normal time of their program.	HEGIS-IPEDS Ozan-Parra Database from IPEDS Graduation Rates
State Adopting a Community College Baccalaureate Policy	Dummy Variable (1 ,0) 1= Indicates the year of adoption and all consecutive years after adoption for adopting states. 0=None Adoption at that point of time	Community College Baccalaureate Association
Log Total Enrollment in Four-Year Public	Summatory of the total number of undergraduate students enrolled for 12 or more semester credits, or 12 or more quarter credits, or 24 or more contact hours a week each term. Plus the total number of undergraduate students enrolled for either 11 semester credits or less, or 11 quarter credits or less, or less than 24 contact hours a week each term in Public 4-Year or Above (Sector Number 1) Institutions	Delta Cost Project Database from IPEDS Enrollment Fall
Log Total Enrollment in Two Year Public	Summatory of the total number of undergraduate students enrolled for 12 or more semester credits, or 12 or more quarter credits, or 24 or more contact hours a week each term. Plus the total number of undergraduate students enrolled for either 11 semester credits or less, or 11 quarter credits or less, or less than 24 contact hours a week each term. In Public-2 Year (Sector Number 4) Institutions	Delta Cost Project Database from IPEDS Enrollment Fall
Total fall FTE student Enrollment	Summatory Full-time equivalent enrollments are derived from the enrollment by race/ethnicity section of the fall enrollment survey. The full-time equivalent of an institution's part-time enrollment is estimated by multiplying part-time enrollment by factors that vary by control and level of institution and level of student; the estimated full-time equivalent of part-time enrollment is then added to the full-time enrollment of the institution. This formula is used by the U.S. Department of Education to produce the full-time equivalent enrollment data published annually in the Digest of Education Statistics. For all degree granting institutions (Sector 1,2,3,4,5,6)	Delta Cost Project Database from IPEDS Enrollment Fall

Variable	Description	Source
Log Per FTE HE State Appropriations (Real 2014 Values)	Summatory of the Revenues received by the institution through acts of a state legislative body (except grants and contracts and capital appropriations). Funds reported in this category are for meeting current operating expenses, not for specific projects or programs. Plus Revenues from appropriations by a governmental entity below the state level. Education district taxes include all tax revenues assessed directly by an institution or on behalf of an institution when the institution will receive the exact amount collected. These revenues also include similar revenues that result from actions of local governments or citizens (such as through a referendum) that result in receipt by the institution of revenues based on collections of other taxes or resources (sales taxes, gambling taxes, etc.) of all Higher Education Institutions in State (Secotr1-9). Divided by total fall FTE student Enrollment.	Delta Cost Project Database from IPEDS Finance Revenues
Log In district Tuition and Fees for Public 2 Year (Real 2014 Values)	Average In-district tuition and fees for full-time undergraduates (Sticker price)In Public-2 Year (Sector Number 4) Institutions	Delta Cost Project Database from IPEDS Institutional Characteristics
Log Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	Average In-state tuition and fees for full-time undergraduates (Sticker price) In Public-4 Year or Above (Sector Number 1) Institutions	Delta Cost Project Database from IPEDS Institutional Characteristics
Log Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	Average Out of State tuition and fees for full-time undergraduates (Sticker price) In Public-4 Year or Above (Sector Number 1) Institutions	Delta Cost Project Database from IPEDS Institutional Characteristics
Log PerFTE State and Local Grants for Fellowships and Scholarships	Summatory of Grants by state government includes expenditures for scholarships and fellowships that were funded by the state. Plus Grants by local government are for scholarships and fellowships that were funded by local government. Divided by total fall FTE student Enrollment	Delta Cost Project Database from IPEDS Finance Scholarships & Fellowships
High School Survival Rate	Percentage of High school graduates from those who entered 9th grade 4 years previous	ELSI - Elementary and Secondary Information System National Center for Education Statistics, Common Core of Data (CCD), "State Non-fiscal Public Elementary/Secondary Education
Percentage of High School Students who took SAT test	Total of High school graduates that took the SAT	College Entrance Examination Board
Log Per capita Expenditures for K-12 Education (Real 2014 Values)	Annual expenses for grades k-12 divided by the total population of state	ELSI - Elementary and Secondary Information System National Center for Education Statistics, Common Core of Data (CCD), "National Public Education Financial Survey (e.g. State Fiscal 1989-90 FY 1990)

Variable	Description	Source
Unemployment Rate	Annual Average of Monthly Unemployment Rate in State	Bureau of Labor Statistics Local Area Unemployment Statistics
Log Median Income (Real 2014 Values)	Median House Hold Income by State	Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements
Total State Population	Total State Population	U.S. Census Bureau
Log Total Latino Population	Total Hispanic	U.S. Census Bureau
Log Total White Population	Total White Non-Hispanic	U.S. Census Bureau
Government Ideology Index	Measures of the ideology of a state's citizens and political leaders, using the roll call voting scores of state congressional delegations, the outcomes of congressional elections, the partisan division of state legislatures, the party of the governor, and various assumptions regarding voters and state political elites.	"ADA/COPE measure of state government ideology." Berry, William D., Evan J. Ringquist, Richard C. Fording and Russell L. Hanson. 1998-2013."Measuring Citizen and Government Ideology in the American States, 1960-93." American Journal of Political Science 42:3 27-48.

APPENDIX B

Common Trend Assumption Analysis Graphical Examination

I graphed the undergraduate enrollment in public 4-Year institutions for all students before and after the change in CCB policy as a preliminary evaluation of the common trend assumption necessary to apply difference in differences as an identification strategy of the effects of the CCB policy. Graphically it appears there is no violation of the common trends assumption. Appendix B.2 displays the natural log of the total number of undergraduate students in public 4-Year institutions before and after the change in CCB policy for 19 states of the 22 adopting states excluding New York, California, and Michigan. New York adopted ten years before the analytical period and California and Michigan are also exempted because they changed their policy in 2014 and 2015 respectively and this study does not contain enrollment data after 2013.

The horizontal line indicates when the switch from not allowing CCBs to offering CCBs occurred. The black trend line is the trend for the total undergraduate enrollment in control states. All 19 states cross the horizontal line because enrollment data has available before and after the policy change. As a result, along with all other adopter states, information from Vermont, West Virginia, Utah, Ohio, and Arkansas will help evaluate the impact of the CCB policy change. Furthermore undergraduate enrollment trends for all states are much more stable than the trends of graduation rates. Most of the enrollment trend lines remain similar before and after the policy change, with the exception of Florida and Washington. The slope of the enrollment trend appears to increase its positive slope shortly after the change in policy. Hence in Appendix B.1, the common trends assumption appears to be truth for undergraduate

enrollment of all students.

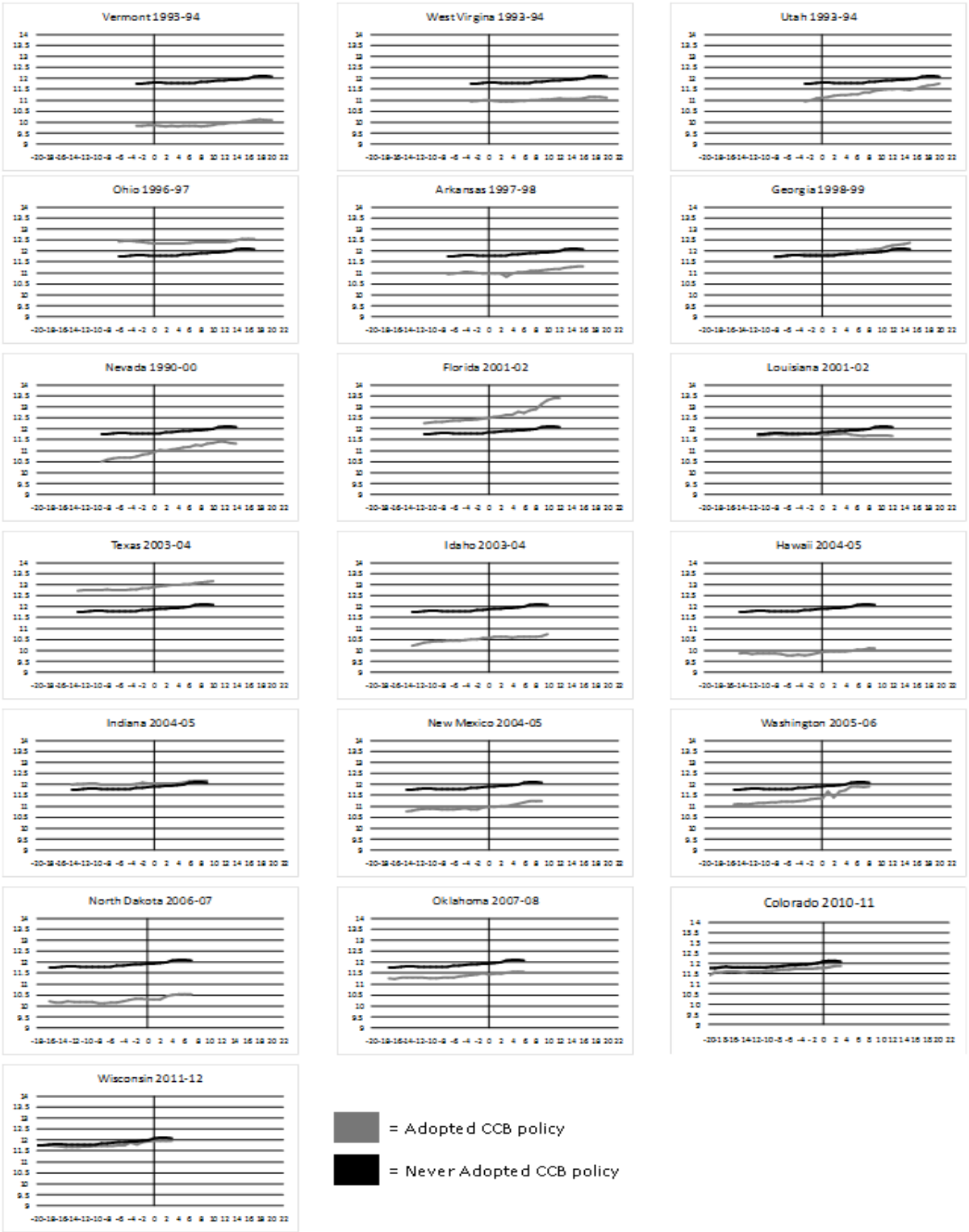


Figure B. 1 Total Undergraduate Enrollment at Public 4-year Institutions in Relation to the Year

of CCB policy change

Appendix B.2 displays the natural log of the total number of Latino undergraduate students enrolled in public 4-Year institutions before and after the change in CCB policy for 19 states of the 22 adopting states excluding New York, California and Michigan. Appendix B.3 shows that Nevada, Florida, Texas, New Mexico and Colorado enroll much higher number of Latino undergraduates than the control group before and after the change of Policy. Oklahoma, Washington, Ohio, Utah, Georgia and Wisconsin also enroll higher number of Latinos than non-adopter states but, the gap difference is narrower. The slopes for these twelve states trend appear constant before and after the shift.

Vermont, West Virginia, Arkansas, Louisiana, Idaho, Hawaii, and North Dakota enroll fewer undergraduate Latinos than the control group, but the gap difference is narrower. The trends for all these last states appear steady before and after the policy shift. Thus, it appears that the graphically the total Latino undergraduate enrollment in public 4-year institutions for these states meets the common trends assumption.

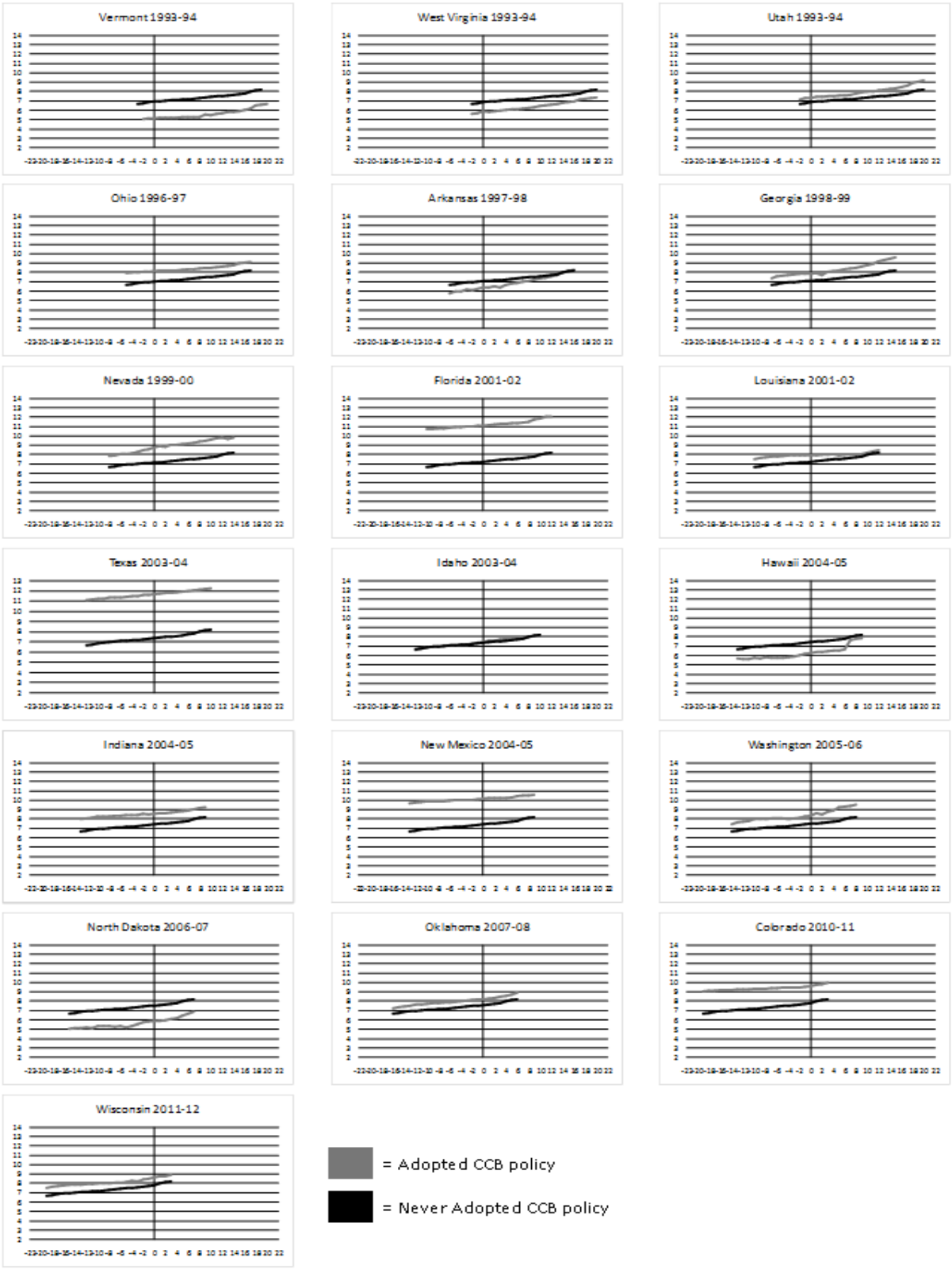


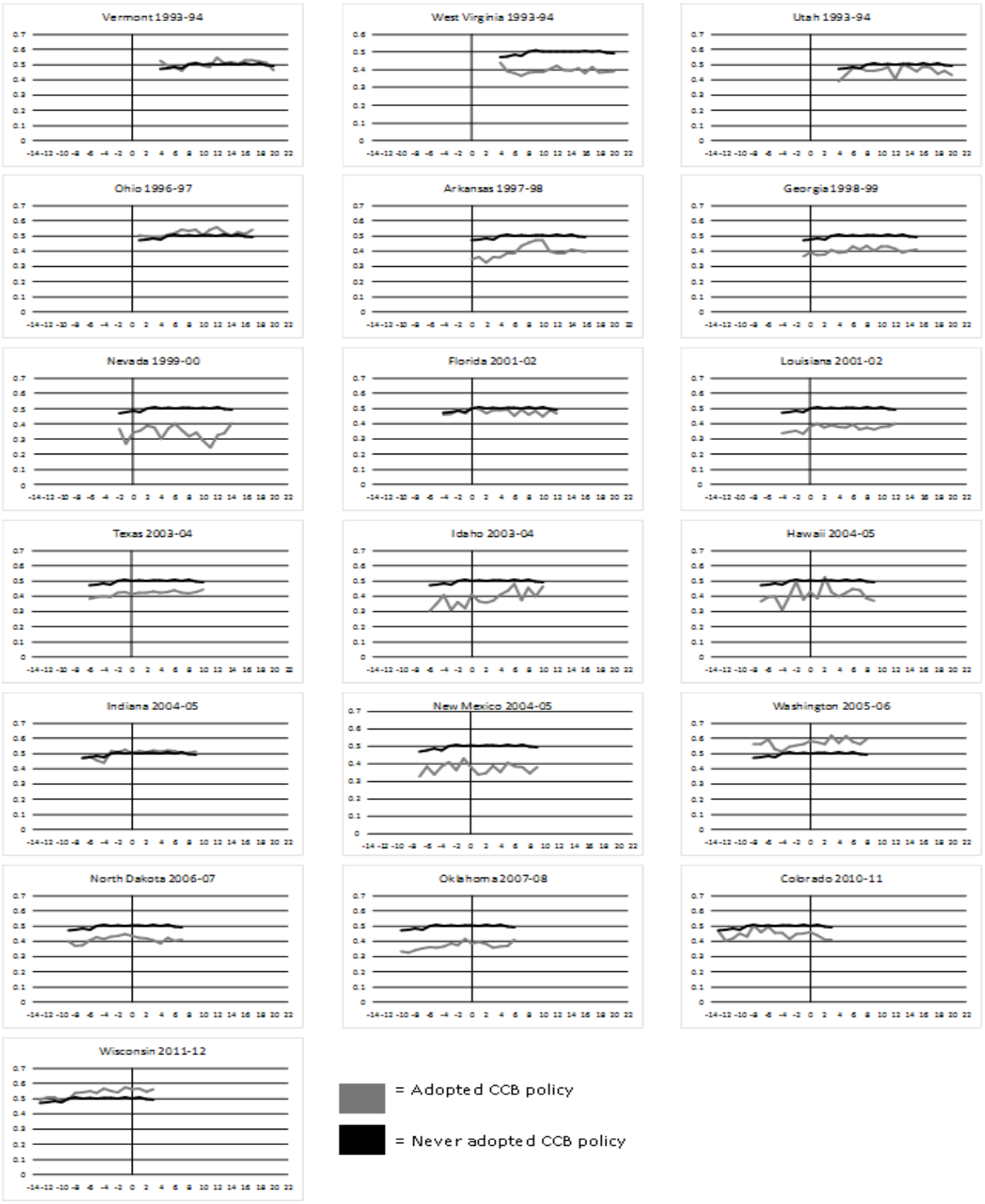
Figure B. 2 Log Latinos' Total Undergraduate Enrollment at Public 4-year Institutions in

Relation to the Year of Policy Change to a CCB.

I also graphed the state's average six-year graduation rate for all students before and after the change in CCB policy as a preliminary evaluation of the common trend assumption necessary to apply difference in differences models as an identification strategy of the effects of the CCB policy. Graphically it appears there is no violation of the common trends assumption.

Appendix B.4 displays the state's average six-year graduation rate for all students before and after the change in CCB policy for 19 of the 22 adopting states. New York adopted the policy in 1979, ten years before the analytical period, so it is not graphed. California and Michigan are also not included because they changed their policy in 2014 and 2015 respectively, and this study does not contain graduation rates after 2013.

The horizontal line indicates when the switch from not allowing CCBs to offering CCBs occurred. As previously discussed, no state has opted out of a CCB policy once the policy has changed. The black trend line is the trend for the control of states that have not adopted CCB policies.



Source: Calculated from Jaquette-Parra IPEDS-HEGIS database.

Figure B. 3 State Average Six-Year Graduation Rate for All students in Public 4-year Institutions in Relation to the Year of Adoption of CCB policy

Appendix B.4 shows that Vermont, West Virginia, and Utah do not cross the horizontal line because they changed their policy in 1993, and IPEDS started collecting graduation rate data until 1997. Ohio and Arkansas do not cross the line either because they changed their policy in 1996 and 1997 respectively. Because the study does not have before-and-after graduation rate data for these states, the fixed effects model measured the impact of adopting a CCB policy from the before-and-after information of Georgia, Nevada, Florida, Louisiana, Texas, Idaho, Hawaii Indiana, New Mexico, Washington, North Dakota, Oklahoma, Colorado, and Wisconsin. West Virginia, Vermont, Utah, Ohio, and Arkansas are included in my analysis, but the model does not observe the pre and post-graduation rates in the examination of the policy change effect.

Appendix B.4 16 shows that Vermont, West Virginia, Georgia, Texas, Indiana, and North Dakota have flat trends with slopes that change little over time. In general, none of the 19 graphs indicates a radical variation in the average graduation rate before and after the change to a CCB policy in each state. Thus, the common trends assumption appears to be true in this initial graphical evaluation.

Appendix B.4 displays the state average six-year graduation rate for Latinos before and after the change in CCB policy**.** As mentioned before, only 19 states are included because the year of the policy change is outside of my analytical period. Additionally, the calculation of the impact of the policy on graduation rates for Latinos takes into account only states that have before-and-after policy change information.

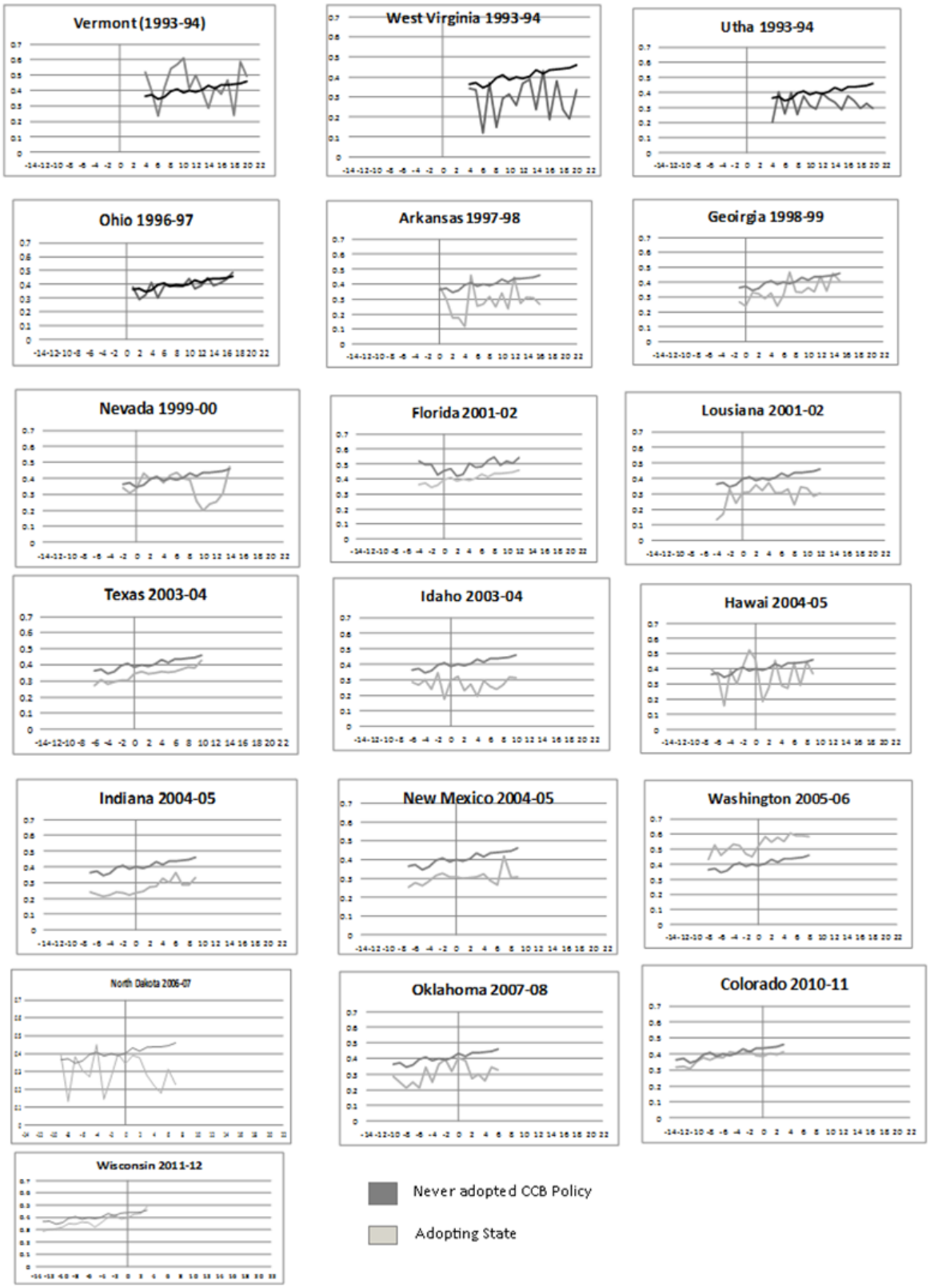


Figure B. 4 Six-Year Graduation Rate for Latinos in Public 4-year Institutions in Relation to the

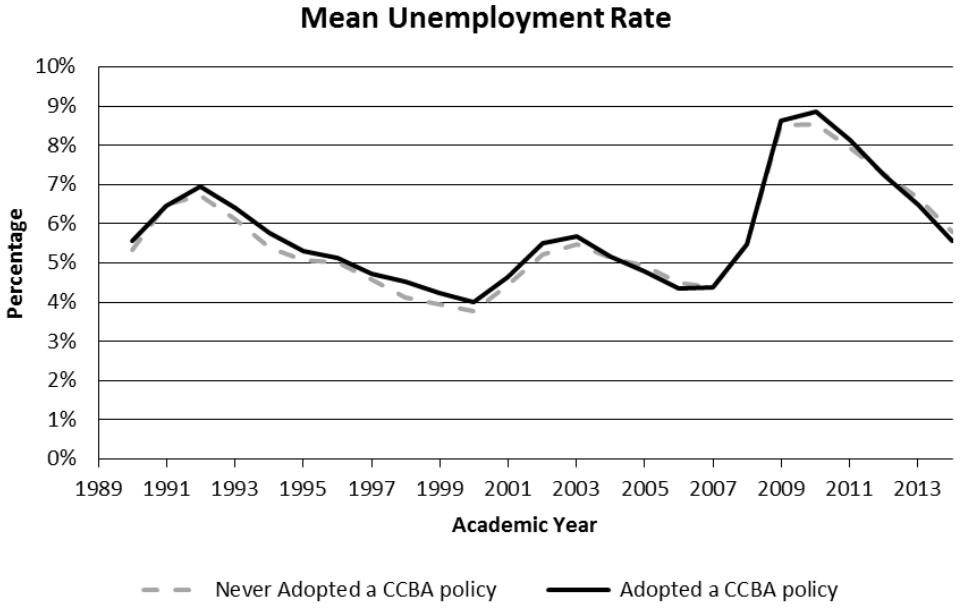
Year of Adoption to a CCB Policy

Appendix B.4 also shows small variation in the Latino graduation rates trends before and after the change to a CCB policy. The graduation rate for Latinos fluctuates dramatically in Vermont, West Virginia, Utah, Arkansas, Louisiana, Idaho, Hawaii, North Dakota, and Oklahoma before and after the policy. The reason may be because those states have a very small number of Latino populations (see Table A.1 in appendix). Because they probably have small numbers of Latino graduates every year, the rate could vary dramatically from year. In contrast, states with higher Latino population such as Florida, Texas, Indiana, New Mexico, Washington, Colorado, and Wisconsin have more stable six-year graduation rate trends.

Additional Control Variables Trend Analysis

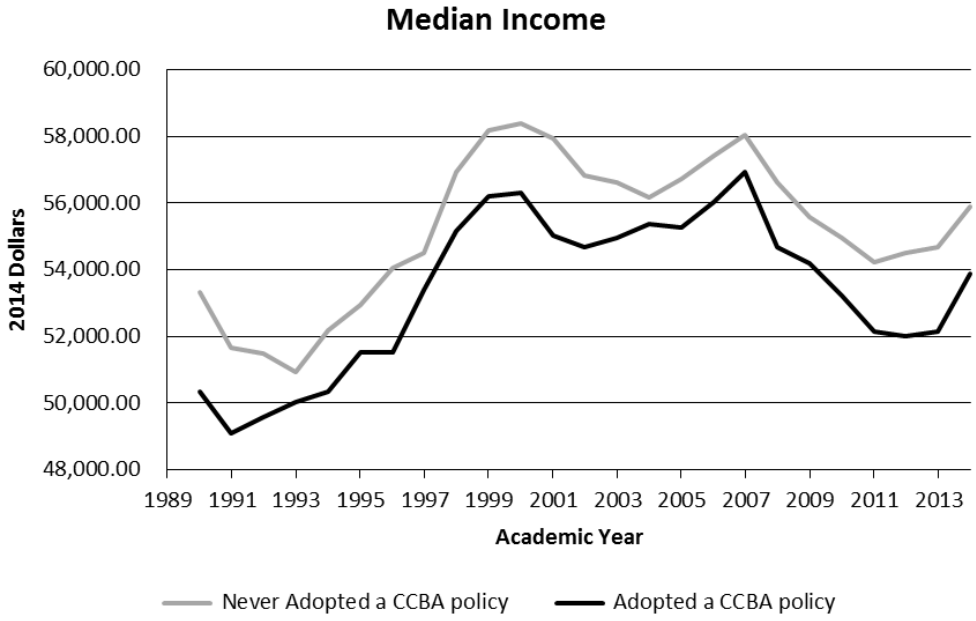
Socio-demographic Context

Appendix B.6 shows how median income changed similarly for both groups during all these years, thus maintaining the gap. Family income has been tied before to academic attainment (St. John, 2013), so state wealth differences might also explain difference in graduation rate. Families in non-adopter states are able to invest more in their members' education. Additionally these states may have been collecting taxes on higher incomes, thus providing the government with more resources to support higher education. Unemployment rate trajectories for adopter states and non-adopters are almost identical. Unemployment rates fell from 1993 to 2000 then increased in 2001 and 2002. In 2003, unemployment rates improved again until 2008 when they increase to find the maximum in 2009 to start recuperating in 2011.



Source: Unemployment data from Bureau of Labor Statistics Local Area Unemployment Statistics

Figure B. 5 Mean Unemployment Rate (2014 dollars) by CCB policy Adopting and Non-Adopting States, 1990-2014



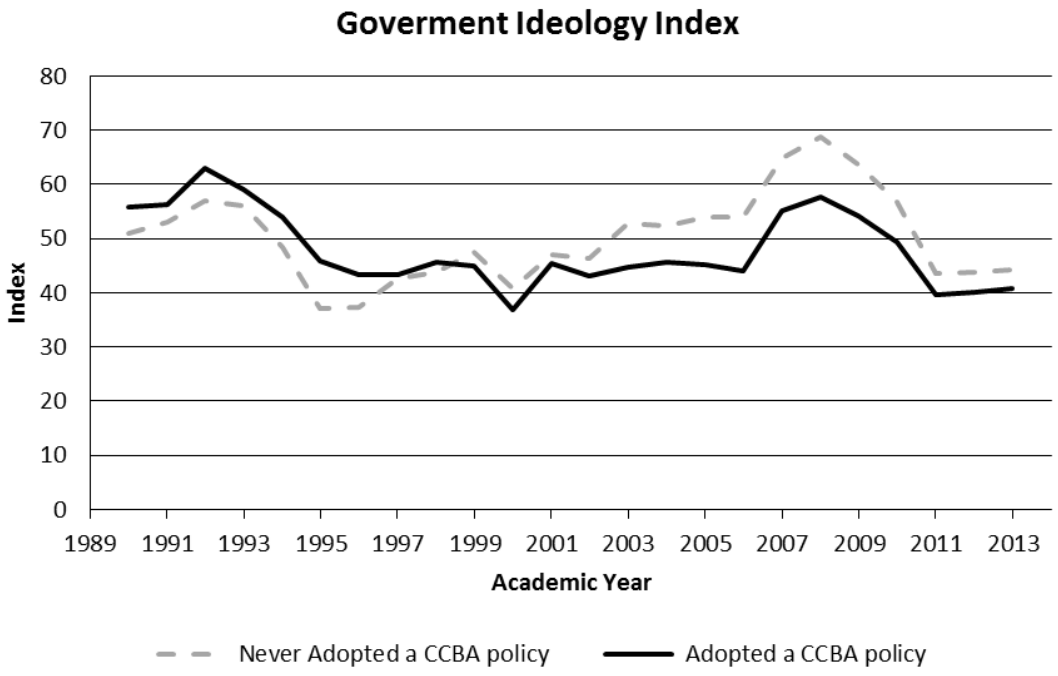
Source: Median House hold Income from U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements

Figure B. 6 Median House Hold Income (2014 dollars) by CCB policy Adopting and Non-Adopting States, 1990-2014

Political Ideology

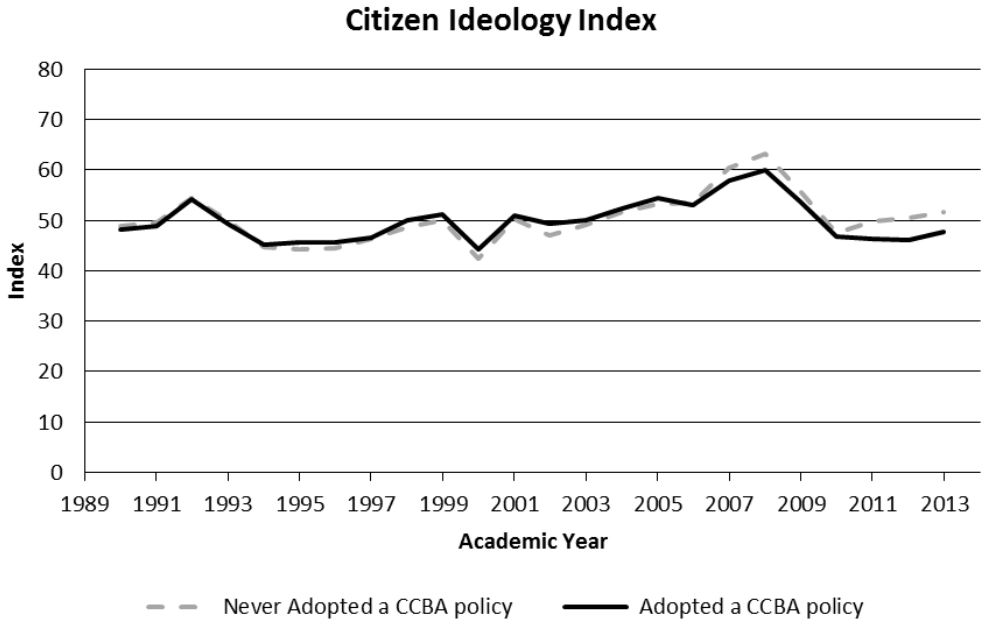
Citizen ideology is defined as “the mean position on a liberal-conservative continuum of the "active electorate" in a state. 1-100 Higher scores indicate more liberalism.

State government ideology-the mean position on the same continuum of the elected public officials in a state, weighted according to the power they have over public policy decisions” (Barry et al., 1998, p.327).



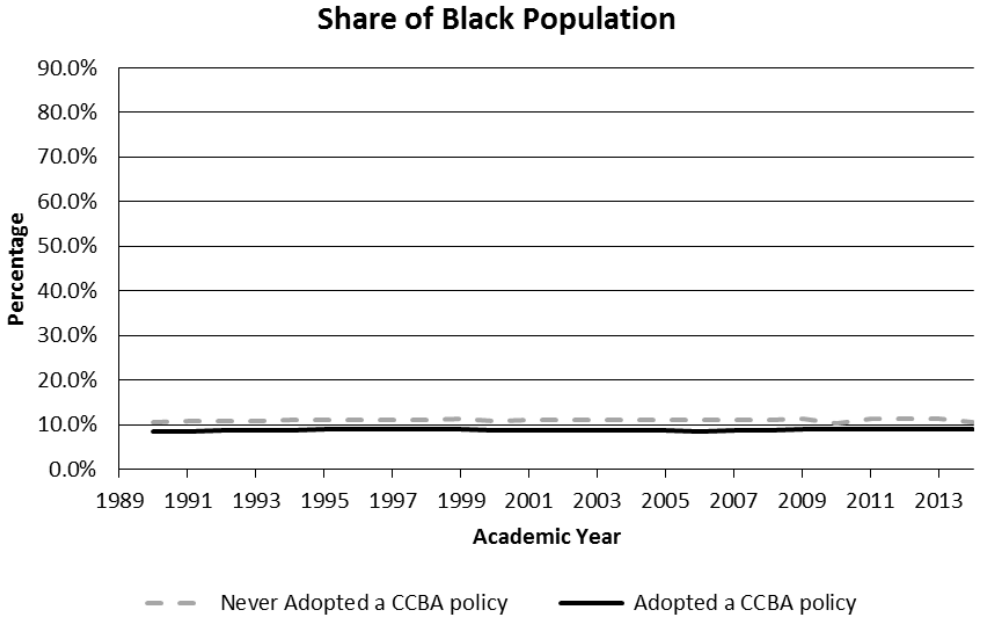
Source: Barry et al. (2016)

Figure B. 7. Mean Government Ideology Indexes for adopting and non-adopting states.



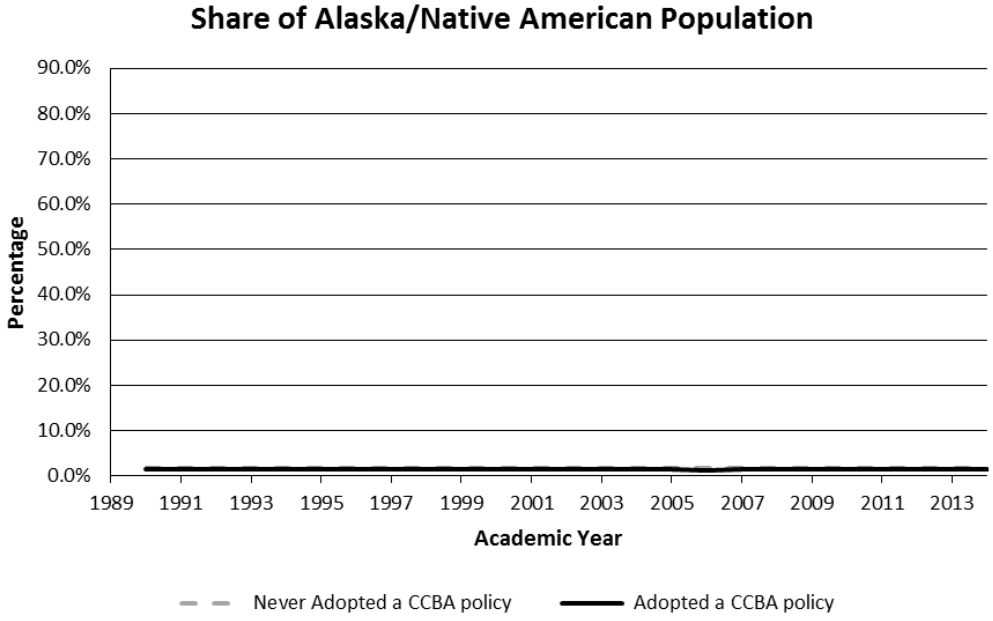
Source: Barry et al. (2016)

Figure B. 8. Mean of Citizen Ideology Indexes for adopting and non-adopting states



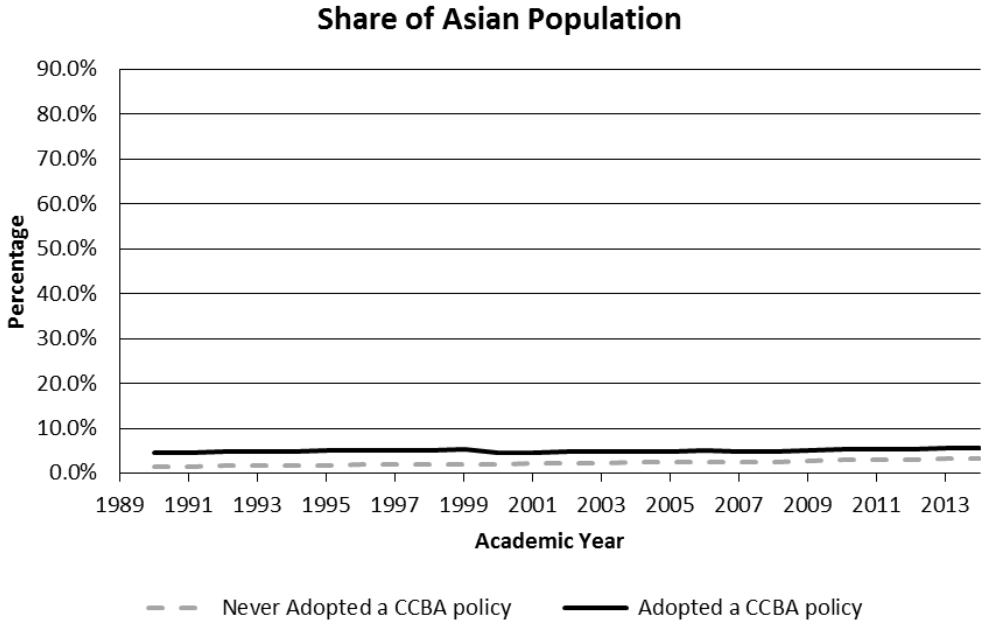
Source: U.S. Census Bureau.

Figure B. 9. Share of Black Population by Race/ Ethnicity by CCB Adopting and Non-Adopting States, 1990-2014.



Source: U.S. Census Bureau.

Figure B. 10. Share of Alaska/Native American Population by Race/ Ethnicity by CCB Adopting and Non-Adopting States, 1990-2014

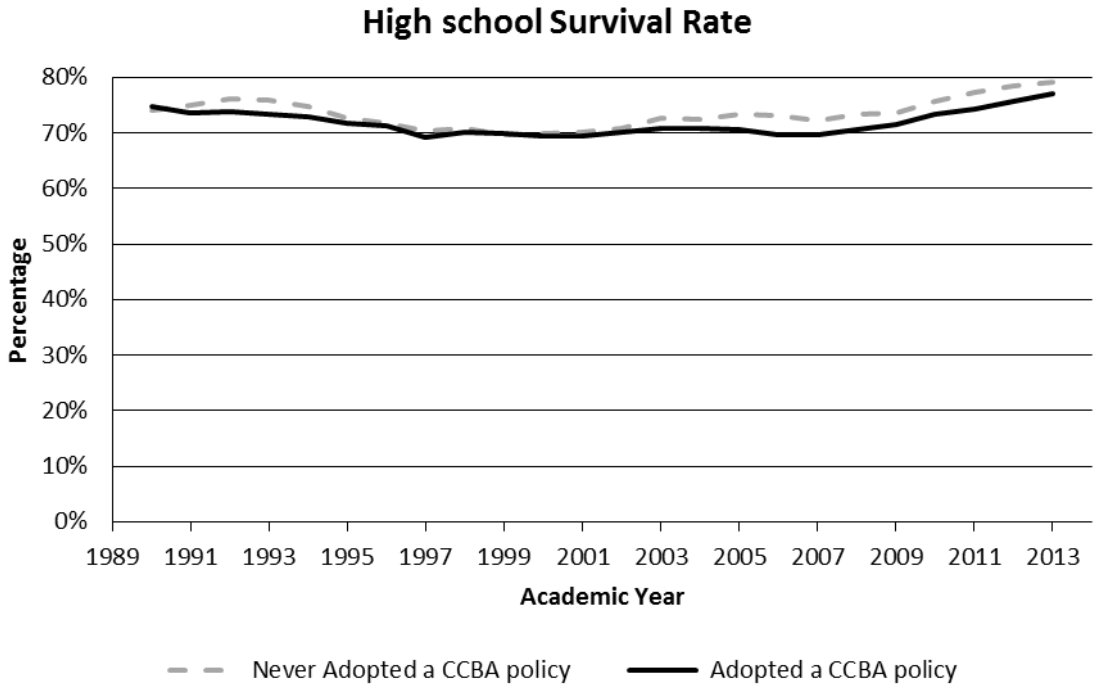


Source: U.S. Census Bureau.

Figure B. 11. Share of Asian Population by Race/ Ethnicity by CCB Adopting and Non-Adopting States, 1990-2014

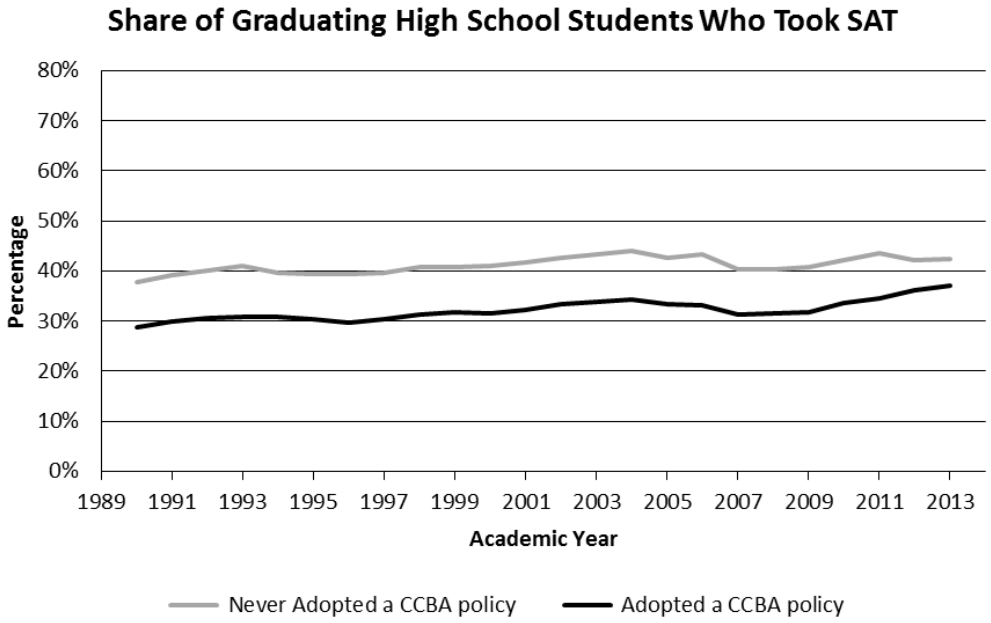
Pre-College Academic Preparation and Investment

Over time, the development of both groups preparation increases similarly. From 1990-95, the high school survival rate was around 75% for both groups. In 1996, the high school survival rate started to drop to achieve its minimum of 69% in 2000. After 2000, the high school survival rate constantly improved and reached around 79% for non-adopters and 77% for adopters by 2013. The trend of K-12 expenditures per capita shows this gap (Appendix B.14). It also shows how the gap has widened since 2005. Both trends are positive and with a similar form.



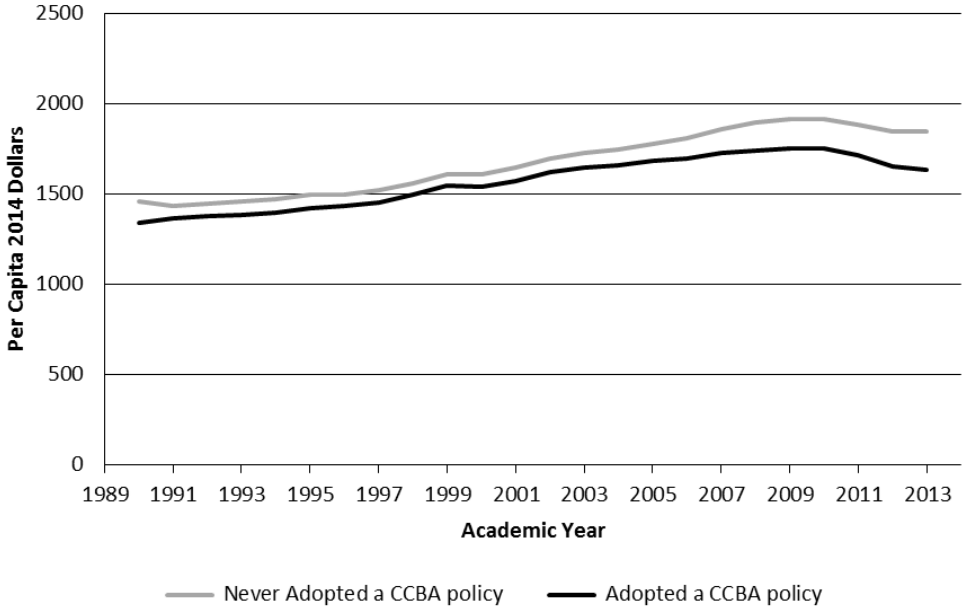
Notes: The Survival Rate is the percentage of high school graduates from those who entered 9th grade 4 years previous.
Sources: High school Survival Rates calculated from Elementary and Secondary Information System National Center for Education Statistics.

Figure B. 12. High School Survival Rate by CCB Adopting and Non-Adopting States, 1990-2013



Source: Share of Student who took SAT, College Entrance Examination Board

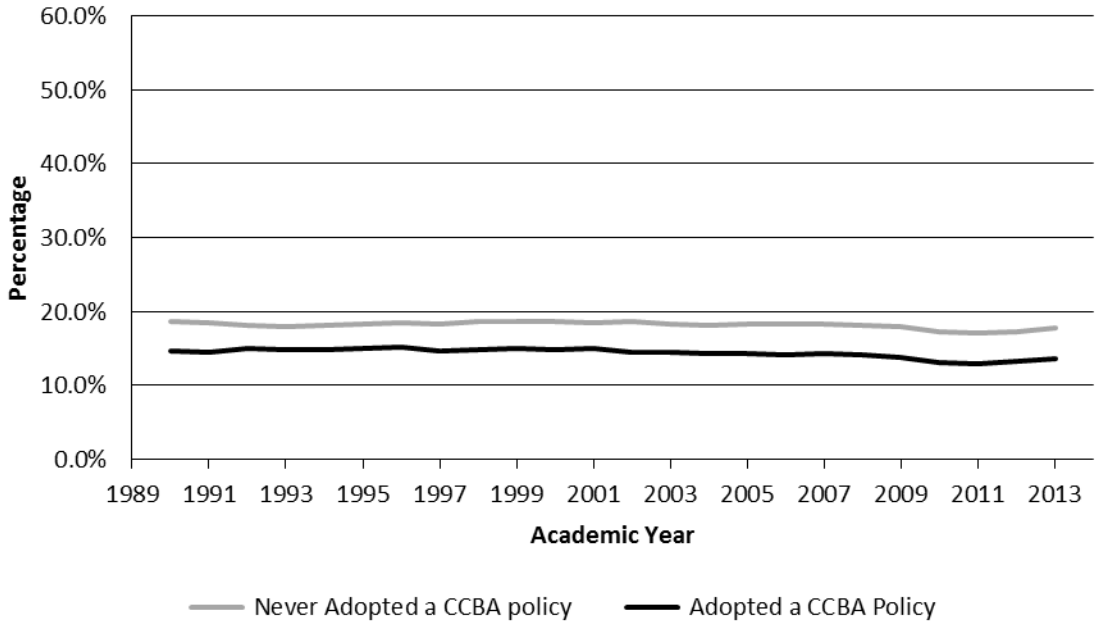
Figure B. 13. Share of Graduating High School Students Who Took Sat Test by CCB Adopting and Non-Adopting States, 1990-2013



Source: Calculates from Elementary and Secondary Information System National Center for Education Statistics, Common Core of Data

Figure B. 14. Mean K-12 Expenditure Per-Capita by CCB Adopting and Non-Adopting States, 1990-2013 (2014 Dollars).

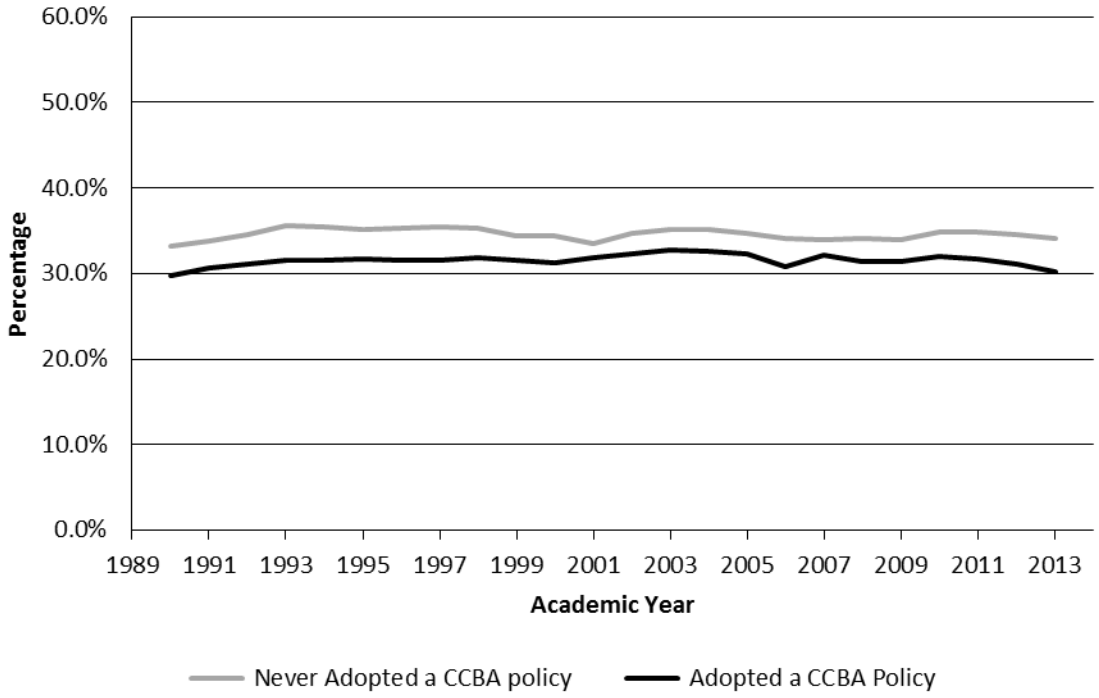
Undergraduate Student Enrollment Patterns



Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure B. 15. Share of Undergraduate Students Enrolled in the Four Year Private Non-profit Institutions by CCB Policy Adopting and Non-adopting States, 1990-2013

Graphically, the trend of enrollment in private institutions is almost constant in these 23 years with a very slightly negative slope in both groups. Undergraduate students enrolled in private institutions in non-adopter states was approximately 19% in 1991 and 18% in 2013. For states that established a CCB policy the percentage of undergraduate students enrolled in private institutions in 1991 was approximately 15%, and in 2013 was 14%.



Source: Calculated from Delta Cost Project IPEDS Database (2016)

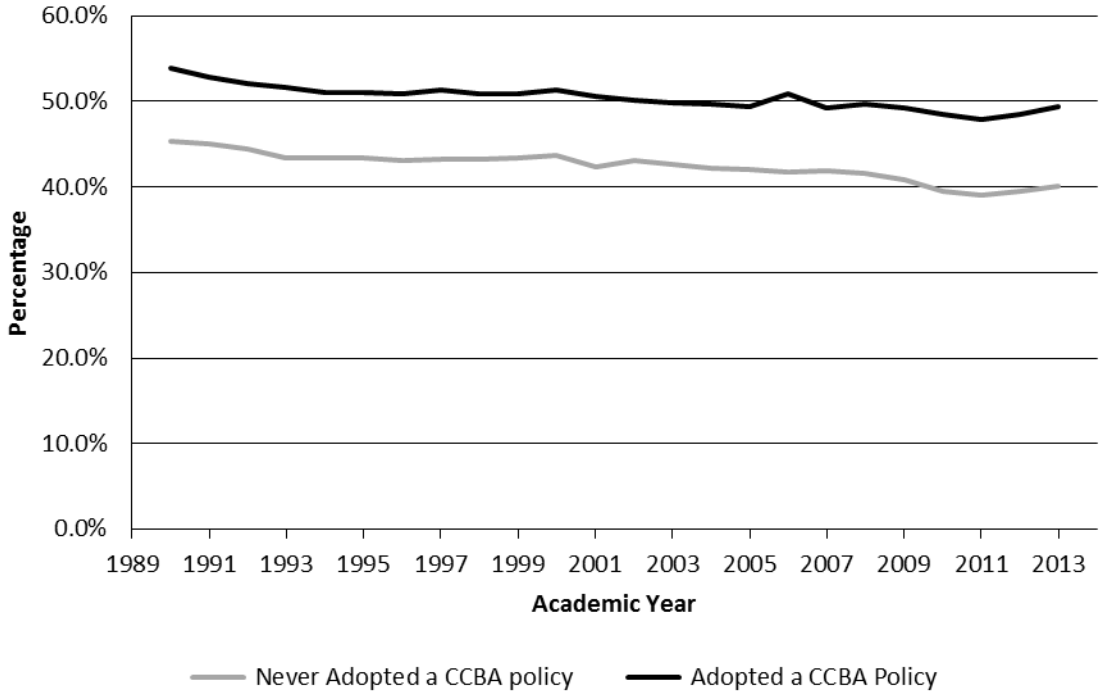
Figure B. 16. Share of Undergraduate Enrollment in Public 2-Year Institutions by CCB Policy Adopting and Non-Adopting States, 1990-1991.

States that have not adopted a CCB policy represent a slightly higher percentage of students enrolled in public, two-year institutions (35%) than those that established CCBs (32%). This trend of enrollment in community colleges is almost constant in these 23 years with a very slightly negative slope in both groups. Undergraduate students enrolled in public 2-year institutions in non-adopter states was approximately 33% in 1991, and 34% in 2013. For states that established a CCB policy, the percentage of undergraduate students enrolled in these institutions in 1991 was approximately 29%, and in 2013 was 30%.

Undergraduate Enrollment in 4-year Public Institutions for Students of All Races

From 1990 to 2013, both groups presented a slight downward trend in their undergraduate enrollment in public four-year institutions. In 1990, students in these institutions represented 45% of all undergraduate enrollment for states that never adopted a CCB policy. For states that

shifted into a CCB policy, this percentage was 54% in that year. By 2013 the percentage of undergraduate students for non-adopters and adopters was 40% and 49% respectively.



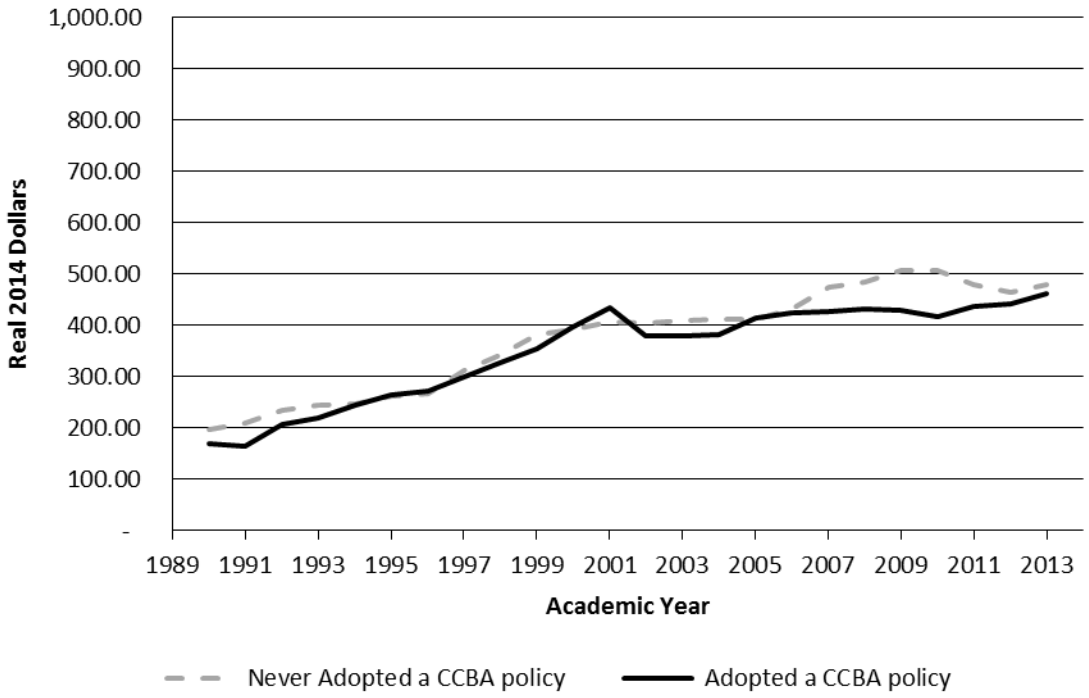
Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure B. 17. Share of Undergraduate Enrollment for Students of All Races in Public 4-Year Institutions by CCB Policy Adopting and Non-Adopting States, 1990-2013

College Cost/Investment

State and Local Grants for Scholarship and Fellowships

The trends over the years of both groups overlap, thus presenting a positive slope from 1990 until 2001 when the slope decreases for the rest of the period (Appendix B.18). Non-adopter states provided a slightly higher amount to their students from 2007 to 2011. This increase falls in 2011, and the trend lines for control and treatment groups match again.



Source: Calculated from Delta Cost Project IPEDS Database (2016)

Figure B. 18. Mean of Grants by State and Local Government for Scholarships and Fellowships per Full-Time Students by CCB Adopting and Non-Adopting States, 1990-2013 (2014 Dollars)

Table B. 1 Correlation matrix for dependent and independent variables

	4 year graduation rate Latinos in 4-public colleges	% Enrolled in Two-Year Public	% Enrolled in Four-Year Public	Per FTE HE State Appropriations
4 year graduation rate Latinos in 4-public colleges	1			
% Enrolled in Two-Year Public	0.5608***	1		
% Enrolled in Four-Year Public	-0.6846***	-0.7248***	1	
Per FTE HE State Appropriations	-0.3315**	0.1006	0.3384**	1
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	0.1214	-0.4072**	0.0091	-0.4284**
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	0.3759**	-0.1715	-0.186+	-0.525***
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	0.5527***	0.0107	-0.3004*	-0.4454***
Per FTE State and Local Grants for Fellowships and Scholarships	0.4191**	0.3775**	-0.361**	-0.0022
High School Survival Rate	-0.004	-0.1521	-0.0211	-0.2975*
Percentage of High School Students who took SAT test	0.4000**	-0.076	-0.2058+	-0.0954
Per capita Expenditures for K-12 Education (Real 2014 Values)	0.0506	-0.1562	0.0321	0.1786
Unemployment Rate	-0.0163	0.1537	-0.0825	0.1397
Median Income (Real 2014 Values)	0.3384**	0.0931	-0.2552+	0.0148
% Latino Population	0.1032	0.3741**	-0.2164+	0.0798
% White Population	-0.0734	-0.4233**	0.1779	-0.4275**
% Black Population	0.1517	0.2303+	-0.1087	0.0978
% Native American	-0.4672***	-0.2593+	0.5215***	0.466***
% Asian (old definition)	0.0406	0.1845+	-0.1751	0.3395**
Citizen Ideology Index	0.2338+	-0.1248	-0.1897+	-0.2394+
Government Ideology Index	0.23+	0.0817	-0.2211+	-0.0314

+p<0.10, *p<0.05,
**p<0.01, ***p<0.001

	In district Tuition and Fees for Public 2 Year (Real 2014 Values)	Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	Per FTE State and Local Grants for Fellowships and Scholarships
4 year graduation rate				
Latinos in 4-public colleges				
% Enrolled in Two-Year Public				
% Enrolled in Four-Year Public				
Per FTE HE State Appropriations				
In district Tuition and Fees for Public 2 Year (Real 2014 Values)	1			
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)	0.7559***	1		
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)	0.3872**	0.7785***	1	
Per FTE State and Local Grants for Fellowships and Scholarships	-0.0526	0.1135	0.0716	1
High School Survival Rate	0.4618***	0.3542**	0.1326	-0.169
Percentage of High School Students who took SAT test	0.2092+	0.4672***	0.5714***	0.2589+
Per capita Expenditures for K-12 Education (Real 2014 Values)	0.3486**	0.4437***	0.2759*	0.2067+
Unemployment Rate	-0.3358**	-0.0684	0.0579	0.334**
Median Income (Real 2014 Values)	0.3409**	0.3992**	0.4261**	0.0221
% Latino Population	-0.5016***	-0.3165*	-0.0801	0.2289+
% White Population	0.5669***	0.376**	0.2277+	-0.192+
% Black Population	-0.1879+	-0.0534	-0.1226	0.2709*
% Native American	-0.0487	-0.2455+	-0.2749*	-0.2429+
% Asian (old definition)	-0.2089+	-0.1532	-0.0536	-0.1029
Citizen Ideology Index	0.3076*	0.4943***	0.4196**	0.0872
Government Ideology Index	0.0326	0.3066*	0.3407**	0.1608

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

	High School Survival Rate	Percentage of High School Students who took SAT test	Per capita Expenditures for K-12 Education (Real 2014 Values)	Unemployment Rate	Median Income (Real 2014 Values)
4 year graduation rate					
Latinos in 4-public colleges					
% Enrolled in Two-Year Public					
% Enrolled in Four-Year Public					
Per FTE HE State Appropriations					
In district Tuition and Fees for Public 2 Year (Real 2014 Values)					
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)					
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)					
Per FTE State and Local Grants for Fellowships and Scholarships					
High School Survival Rate	1				
Percentage of High School Students who took SAT test	-0.1768	1			
Per capita Expenditures for K-12 Education (Real 2014 Values)	0.2822*	0.4522***	1		
Unemployment Rate	-0.5953***	0.1766	0.0728	1	
Median Income (Real 2014 Values)	0.3111*	0.5103***	0.5891***	-0.1628	1
% Latino Population	-0.2864*	0.1065	-0.0267	0.2622+	0.0977
% White Population	0.6305***	-0.1929+	0.0717	-0.3466**	-0.1148
% Black Population	-0.6248***	0.099	-0.1613	0.3529**	-0.2139+
% Native American	0.0177	-0.2226+	0.186+	-0.0567	-0.0299
% Asian (old definition)	-0.0961	0.2094+	0.0314	-0.0292	0.3561**
Citizen Ideology Index	0.1683	0.573***	0.4649***	0.1139	0.425**
Government Ideology Index	-0.0386	0.5063***	0.3223*	0.2775*	0.2931*

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

	% Latino Population	% White Population	% Black Population	% Native American	% Asian (old definition)	Citizen Ideology Index
4 year graduation rate						
Latinos in 4-public colleges						
% Enrolled in Two-Year Public						
% Enrolled in Four-Year Public						
Per FTE HE State Appropriations						
In district Tuition and Fees for Public 2 Year (Real 2014 Values)						
Instate Tuition and Fees for Public 4 Year (Real 2014 Values)						
Out of State Tuition and Fees for Public 4 Year (Real 2014 Values)						
Per FTE State and Local Grants for Fellowships and Scholarships						
High School Survival Rate						
Percentage of High School Students who took SAT test						
Per capita Expenditures for K-12 Education (Real 2014 Values)						
Unemployment Rate						
Median Income (Real 2014 Values)						
% Latino Population	1					
% White Population	-0.6102***	1				
% Black Population	-0.14	-0.4227**	1			
% Native American	0.1517	-0.0713	-0.3216*	1		
% Asian (old definition)	0.1362	-0.5915***	-0.1098	-0.0658	1	
Citizen Ideology Index	0.0219	-0.0633	-0.1667	-0.1862+	0.3528**	1
Government Ideology Index	0.0098	-0.1646	0.0371	-0.2397+	0.3242*	0.7728***

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Robustness Check Graphic Results

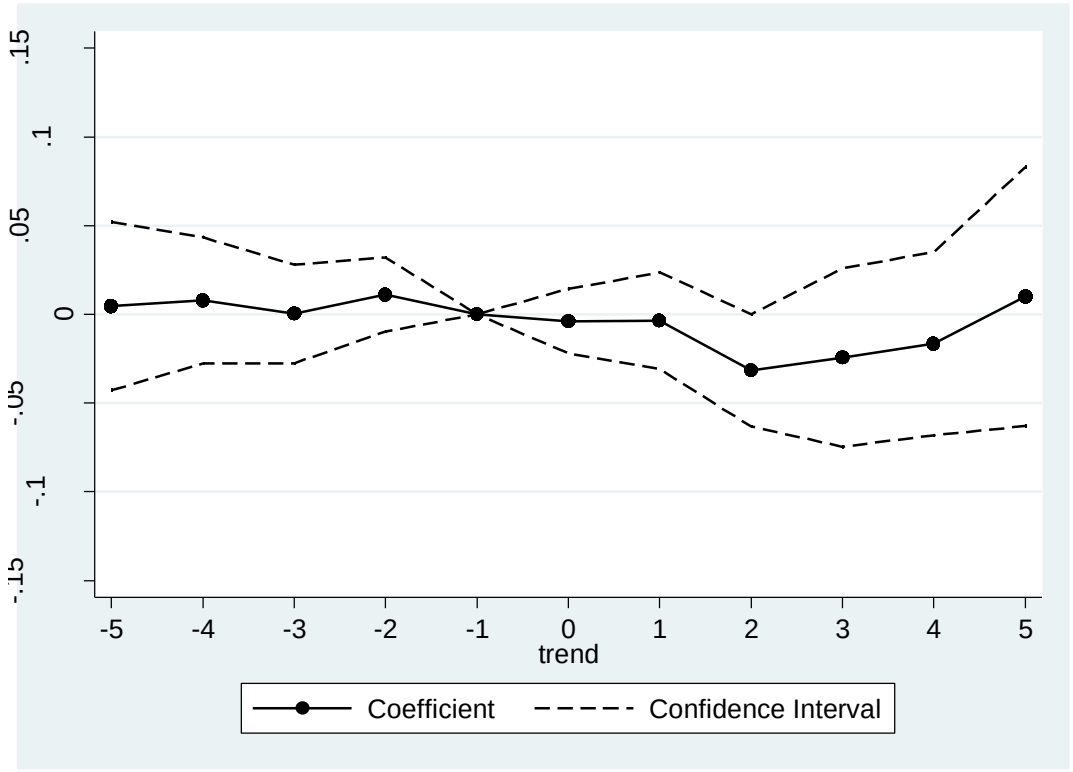


Figure B. 19. Event study estimates of the impact of a CCB policy on the total undergraduate enrollment at public four-year institutions. Only Adopter States

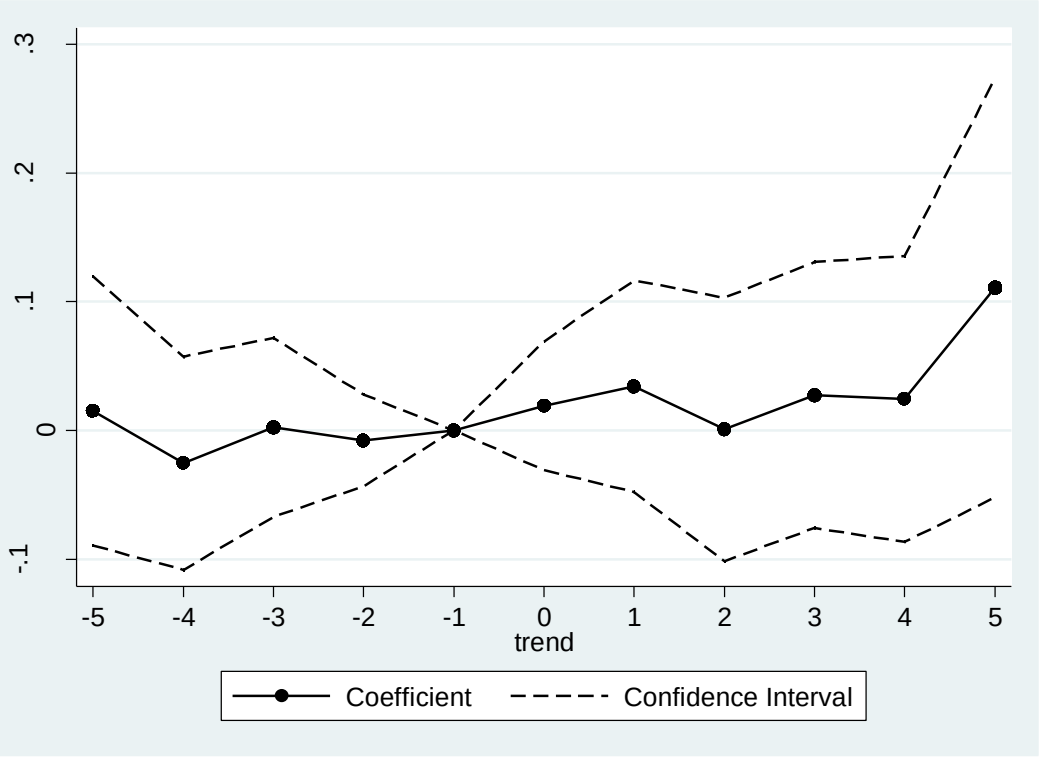


Figure B. 20. Event study estimates of the impact of a CCB policy on Latino undergraduate enrollment at public four-year institutions. Only Adopter States

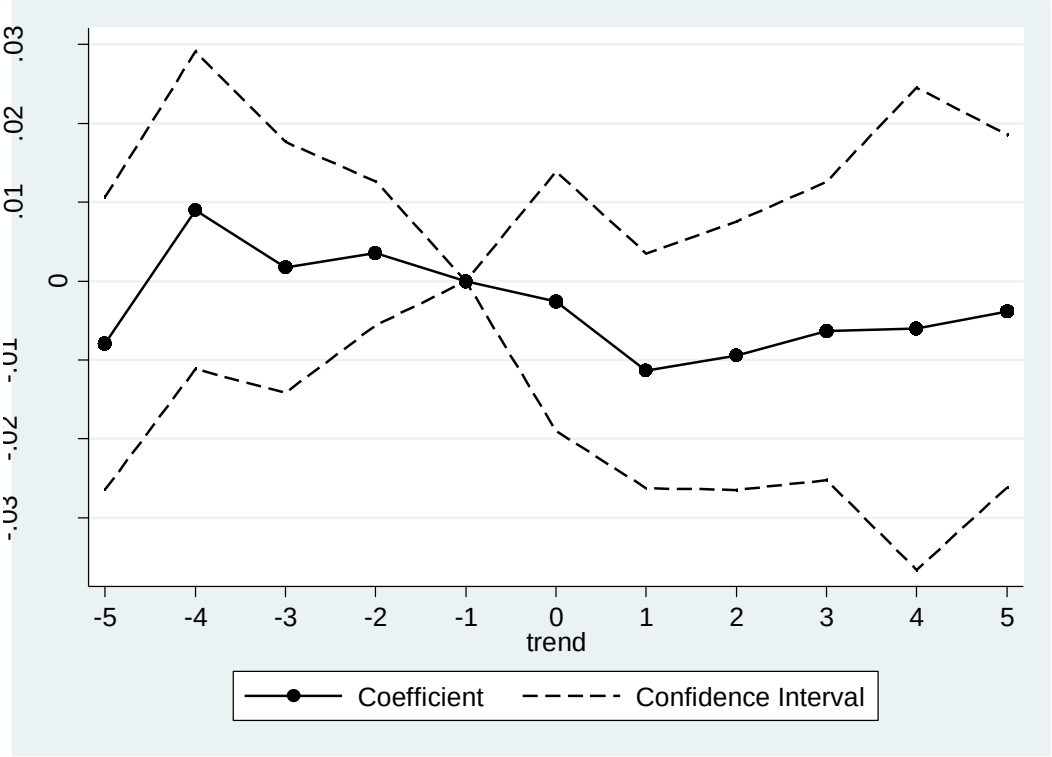


Figure B. 21. Event study estimates of the impact of a CCB policy on state average six-year graduation rates for all students in public four-year institutions

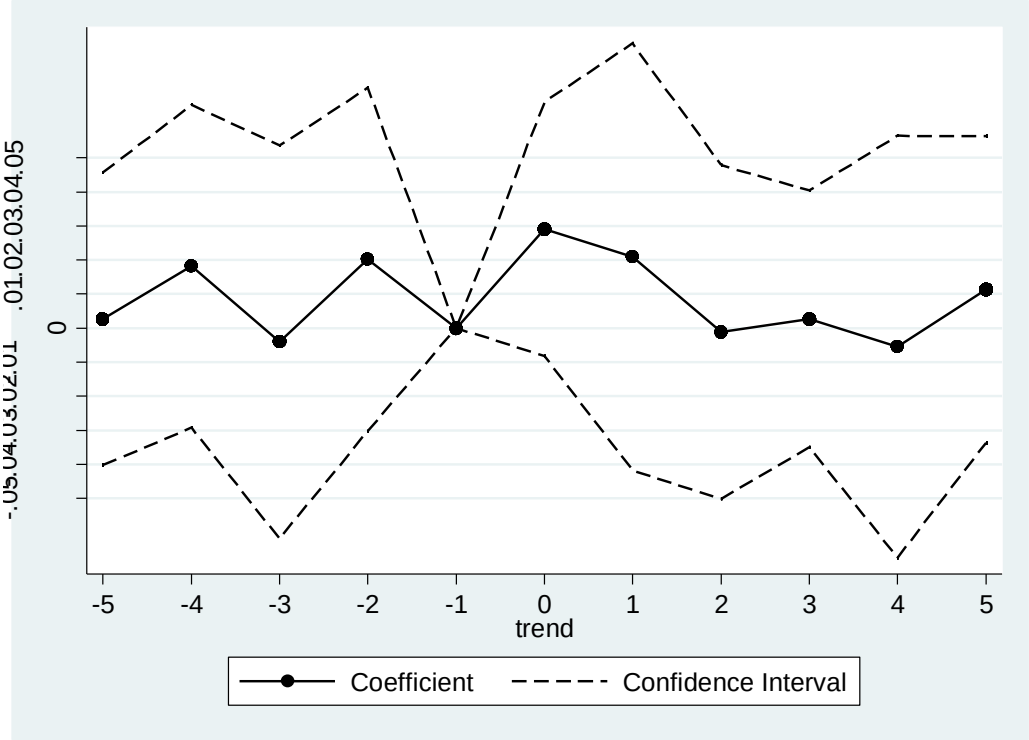


Figure B. 22. Event Study Estimates of the Impact of a CCB policy on State Average Six-Year Graduation Rate for Latino Students in Public Four-year Institutions. Only Adopters

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