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**EDUCATIONAL EXPANSION, SCHOOL SECTOR AND SOCIAL STRATIFICATION:
CHANGING MECHANISMS OF EDUCATIONAL INEQUALITY IN LATIN AMERICA**

A Dissertation in

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by

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ABSTRACT

My dissertation explores the relationship between the global trend of educational expansion and national patterns of educational and social stratification in Chile and Mexico during the last five decades. Research for developed nations suggests that in contexts of educational expansion, “horizontal” inequalities in the quality or type of education replace “vertical” differences in access to or amount of schooling. I build upon this research and seek to contribute to it through a comprehensive analysis of socioeconomic stratification between public and private schools in Chile and Mexico. I consider differences across countries, educational levels and over time, as well as long-term consequences on adult status attainment. Furthermore, I conduct a historical and institutional analysis of the origins and development of education in Latin America to provide a historically-grounded explanation of why school sector stratification is currently so high in Latin America compared to other world regions, and also why levels and patterns of school privatization and school sector stratification vary within Latin American countries. Chile has very high levels of educational expansion and educational privatization. Mexico, by contrast, has not yet achieved the levels of expansion observable in Chile. Mexico has one of the region's most statist and centralized educational systems, though privatization at secondary and tertiary educational levels is an emerging trend. The data I use in this study comes from two nationally representative social mobility surveys of adult men born between 1937 and 1976 in Chile (CSMS 2001) and 1947 and 1986 in Mexico (EMOVI-2011). Analyses follow a multinomial logistic regression and linear regression approach.

Findings show that school sector stratification emerges in Chile as early as primary school, whereas in Mexico it becomes significant at the secondary level. School sector in primary school is a strong predictor of continuation and sector placement at subsequent school transitions in both countries. The probability of the upper strata attending a private high school has been very

high and constant for the entire period under study in both countries; this suggests a relationship of reinforcement (rather than replacement) between vertical and horizontal educational advantages for the children of the elite. In Chile, the probability that middle-SES students will attend the public sector has declined at all levels in parallel to the increase in the chances of attending the private-subsidized sector, especially for those attending school after the voucher reform of the 1980s. This suggests a national trend of replacement for middle-SES groups. A second set of findings shows that private school attendance has significant *direct effects* on adult occupational attainment, net of family background and years of schooling; in Chile, occupational returns are larger for private primary schools, and for Mexico they are larger for private high schools. Also, there is a significant *interaction effect* in that attending a private school (at any level in Chile and at higher levels in Mexico) increases the occupational returns of each additional year of schooling. The occupational gap between public and private students has increased over time in Chile, whereas in Mexico it has remained stable.

These findings contribute to the literature on education inequality by expanding current hypotheses about horizontal stratification in order to account for: a variety of organizational forms, including private schooling and school choice policies; the fact that horizontal differences appear as early as primary education, and have long-term consequences in adult occupational attainment; vertical and horizontal forms of educational stratification can relate to one another not only in terms of replacement, but also of reinforcement. In sum, this study of how Mexican and Chilean organizational differences in school provision affect educational opportunities informs the larger international discussion on the way the mechanisms of social stratification change as education as an institution expands and globalizes.

No one stops to consider what is this education
of which no one can have too much.

—T.S. Eliot, “Modern Education”, 1933

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Chapter 1

Introduction

Mass education presents stratification scholars with a paradox. On the one hand, a conventional narrative holds an almost sacred view of education and schools as the essential tools for the moral and material improvement of humanity, for the emancipation of individuals from ignorance and servitude, and for the equalization of opportunities and conditions of men. Early advocacy in favor of public schooling in the 18th and 19th centuries advanced this vision of education as social progress, as enlightenment, as equality. The fact that education was restricted to an elite, as it was in every human society that existed before the industrial revolution, was denounced as outrageous; education, it was claimed, ought to be a basic right of every person. Two hundred years later, contemporary society has institutionalized that right to education through international declarations and compulsory schooling legislation in countries all over the world. Modern society prides itself on the fact that children of the elite and children of the masses must compete for success on the basis of their academic achievement, as opposed to simply inheriting their status through family names, nobility titles or other ascriptive criteria. As a result, demand for more and better schooling and increased public investments in education have become common practices and legitimate social values. On the other hand, a countervailing narrative depicts mass education as a myth, because the quality of public schools is supposedly appalling and college tuition amounts to a “great robbery”. This point of view maintains the suspicion that the school system is a heartless bureaucratic machine that tests, credentials and socially sorts so it can disguise itself as meritocratic, while in reality, always benefiting those that

start the race for educational credentials with more cultural, social and financial resources in the first place.

Regardless of which view one sympathizes with, educational expansion is one of the most distinctive processes of social change in contemporary society. Historically, the emergence of mass public schooling in Europe and the United States in the 18th century set into motion a self-reinforcing process of educational expansion within and across nations that has lasted until today, and is likely to continue at a similar pace in the future. In developing and middle income countries, the universalization of access to primary and secondary schooling has become an urgent political goal, encouraged and supported by an international community. Advanced industrialized countries are entering a new stage of massification of higher education, and mass graduate education and mass pre-schooling seem the likely next stages of the process. Over the course of this process, the average educational attainment of the entire world population has increased slowly but steadily from about 3 years of schooling in 1950 to about 8 years of schooling in 2010, with both advanced and developing countries following a similar gradual pattern of intergenerational increases (Barro and Lee 2013).

Social scientists have long speculated about the complex historical factors that led to this so-called “educational revolution” (Parsons 1971; Archer 1979; Collins 1979; Bowles and Gintis 1976; Boli, Ramirez, and Meyer 1985; Schofer and Meyer 2005; Archer 1982; Brown 1995; Meyer 1977), and have also investigated its consequences for individual and social life. At the individual level, the benefits of schooling have been clearly established by empirical research. Individual educational attainment is not only the main predictor of adult socioeconomic rewards such as occupational prestige, income or wealth, but it is also consistently associated with a diverse range of valued goods such as longevity, physical and mental health, family stability, social connections and political participation, cultural distinction and political power, and self-rated happiness (Hout 2012; Pallas 2000).

Whether educational expansion has contributed to equalize opportunities and conditions is more contentious. Contemporary research on social stratification and mobility offers a mixed picture that defies utterly optimistic as much as utterly pessimistic accounts (Hout and DiPrete 2006). Expanded educational systems have indeed delegitimized traditional sources of status attainment and opened up historically unprecedented opportunities for upward mobility. But, simultaneously, gaps in access to ever-higher educational levels, as well as differences in the allocation of more prestigious or qualitatively better types of education, have revealed an unexpected and stubborn pattern of “persistent inequality” of educational opportunity (Shavit and Blossfeld 1993). Education is both things at the same time: the main social channel for upward mobility and the main channel for the intergenerational reproduction of status (Hout and DiPrete 2006; Blau and Duncan 1967). Furthermore, patterns of social fluidity (i.e. social mobility net of occupational upgrading) have remained stable among industrialized nations (Erikson and Goldthorpe 1992), and income inequality, though declining across countries since the late twentieth century, increasing within nations (Firebaugh 2006).

In this context of educational expansion and persistent inequality, an emergent issue in recent studies on education and stratification has set the stage for my doctoral investigation. It refers to the increasingly important distinction between “vertical” and “horizontal” dimensions of educational attainment: the former indicates the duration or *amount* of education, and the latter refers to the *type* or quality of schooling. Scholars working within the “education transitions approach” have advanced the hypothesis, known as the “Effectively Maintained Inequality” (EMI), that horizontal inequalities in the *kind* of schooling attained by different socioeconomic groups replace vertical inequalities in the *amount* of schooling, when the latter decline with the universalization of access to primary and secondary education (Lucas 2001; Breen and Jonsson 2000; Ayalon and Shavit 2004; Gerber and Cheung 2008). Research in advanced industrial countries has focused on curricular tracking (between vocational and academic schools in Europe,

within comprehensive high schools in the United States) as the main organizational form of horizontal stratification in education. However, additional institutional structures can be thought of as introducing horizontal differences in educational opportunities, especially when we adopt a comparative-international perspective. Private tutoring and “shadow education” systems that are prevalent in Asian countries are one example; school sector, through socioeconomic differences between public and private schools, is another. Mainstream conceptualization and measurement of horizontal inequalities in education is still in need of a “comparative turn” able to account for the diverse reality of developing countries.

Purpose of the Study

My dissertation is a comparative study of the role played by educational expansion and school sector in the intergenerational processes of educational and social stratification in Chile and Mexico during the last five decades. Latin America as a region is an important case of study for researchers working to analyze horizontal inequalities in education, particularly those organized around school sector, because among Latin American nations the socioeconomic stratification between public and private schools is consistently higher than international standards (OECD 2012b). In addition, two recent studies suggest that the role of school sector in educational stratification increased in Chile, Brazil and Uruguay, but not in Mexico, in the context of the educational expansion of the 1990s and 2000s (Marteletto et al. 2012; Torche 2005a). Substantive explanations of why school sector stratification is so strong in Latin America and why it has increased in some countries but not in others are missing. In addition, these recent studies do not address whether school sector stratification varies by educational level. They also do not consider the long term-occupational consequences of school sector placement during primary and secondary school. Finally, previous studies tend to assume that horizontal

stratification replaces declining vertical differences, overlooking that both kinds of educational stratification can be in place at the same time and reinforce each other.

Through a comprehensive investigation of school sector stratification in Chile and Mexico, its variation across educational levels and over time, and its consequences in adult socioeconomic stratification, I aim at discussing and expanding concepts and hypotheses regarding “vertical” and “horizontal” forms of educational stratification. This is an important and suitable topic for a comparative-international analysis of education inequality because it addresses three basic levels: an institutional process that is global in scope (educational expansion), an organizational process that varies cross-nationally (the role and prominence of private schooling in national school system), and an empirical analysis of individual opportunities in education and work.

I selected Chile and Mexico because they represent, within Latin America, two opposite extremes in terms of the national contexts for vertical and horizontal stratification. Chile has levels of educational expansion at the secondary and tertiary levels proximate to those of industrialized countries and, since the early 1980s, it epitomizes the market-approach to education policy through a nationwide policy of universal school vouchers that promote competition between public and private schools. Furthermore, “Chile is the country with the most comprehensive and fully institutionalized voucher system in the world” (Plank 2009). Mexico, by contrast, has one of the region's most statist and centralized educational systems, and it has not yet achieved the levels of expansion observable in Chile, although privatization at higher educational levels is an emerging trend.

The empirical study consists of two statistical analyses based on nationally representative social mobility surveys in Chile (CSMS 2001) and Mexico (EMOVI-2011). Research Question 1 uses a multinomial logistic regression approach to study changes across birth cohorts in the association between socioeconomic origins (measured as father’s occupation and parental

education) and what I call *school-sector placement transitions*. Placement Transitions are nominal measures of educational attainment that combine the quantitative or “vertical” dimension captured by the traditional binary measure of school transitions (continues to the next level or drops out) and also the qualitative or “horizontal” dimension of school sector placement (attends a public or a private school). Research Question 2 analyzes the association between private schooling placement at different levels of the educational trajectory and adult socioeconomic destinations (measured as occupational attainment) using a linear regression approach.

To give you a brief sense of my results, I find that horizontal inequalities in educational opportunity, organized around school sector, appear in Chile and Mexico as early as primary schooling and become consequential predictors of the amount and kind of later educational attainment, as well as of adult occupational status. This challenges the common assumption that horizontal inequalities play off only at advanced educational levels. A second key finding is that Latin American elites have historically used private schooling as a device of educational advantage and social distinction, even before universalization of primary schooling took place, suggesting that horizontal educational differences have reinforced, rather than replaced, vertical differences in educational opportunity. In Chile, the middle classes have grown with industrialization and have increased their investments in private-subsidized schools. These schools, which do not exist in Mexico, charge lower tuition fees than traditional private schools, or are free and compete for governmental subsidies (i.e. school vouchers) with public schools, which enroll the most vulnerable Chilean population. Regarding Research Question 2, I find statistically a significant private school *direct effect*, net of family background and years of schooling; in Chile, direct effects are larger for primary school attendance, and in Mexico they are larger for high school attendance. I also find that a significant *interaction effect* in that attending a private school (at any level in Chile and at higher levels in Mexico) increases the

occupational returns of each additional year of schooling. The occupational gap between public and private students has increased over time in Chile, whereas in Mexico it has remained stable.

Based on these results, I contribute to the literature by providing an expanded definition of horizontal stratification that encompasses a larger international diversity of organizational forms (e.g. private schooling, shadow education) and educational levels (i.e. primary schooling), understanding the relationship between vertical and horizontal forms of educational stratification in a way that allows for both “replacement” and “reinforcement”, and the introduction of “placement transitions” as a novel methodological measure for the study of educational inequality. These results support the importance of considering differences between public and private students, and horizontal educational differences more generally, including those existing at lower levels of the school system, in studies looking at adult socioeconomic attainment.

In my discussion and throughout each one of the chapters, I advance an overall dissertation argument that can be summarized in five points. First, the historical emergence and international diffusion of mass schooling as the dominant institutional model of modern education created the conditions (i.e. legitimacy) for organizational growth and differentiation of school systems around the world. Second, in Latin America as elsewhere in the Global South, vertical and horizontal educational structures emerged out of the adaptation of blueprints from educational systems around the Western world to local conditions (i.e. resource availability, struggles among powerful actors). Third, private schooling is an important horizontal structure in Latin American school systems due, historically, to the high levels of wealth and power inequality in the region; to the influence of Catholic Church on policy making; and, more recently, to the penetration of market liberalism during the 1980s and 1990s beyond the structural adjustment of the economy and into the realms of social and educational policy. In countries like Mexico or Argentina the influence of the Church and of neoliberal doctrine on education policymaking was comparatively weaker than in Chile, Brazil, Colombia or other countries in the

region. Fourth, contemporary patterns of allocation of educational opportunities (their *amount* and *kind*) among individuals from different socioeconomic strata depend on the vertical and horizontal structure of the school system. Fifth, private schools have played a dual role: “reinforcement” for the elites and, to a lesser extent, “replacement” for the middle classes. Latin American elites have historically used private schooling as a device of educational advantage and social distinction, even before universalization of primary schooling took place, suggesting that horizontal educational differences have reinforced rather than replaced the vertical difference in educational opportunity. In those countries with like Chile or Colombia, private schools funded (totally or partially) by the government through vouchers or other forms of public subsidies opened up an opportunity for middle class families to leave the public system as a way to gain differentiation from lower socioeconomic groups.

Organization of the Dissertation

The dissertation is organized in seven chapters. Chapter 1 is this introduction to the background, purposes and organization of the study. Chapter 2 reviews theories and empirical studies of educational expansion, educational stratification and social stratification. Chapter 3 focuses on how these theories apply to the Latin American experience, and to Chile and Mexico in particular. In reviewing these literatures, which are vast, I have covered canonical theories about each topic and also highlighted some particular elements that are most important to my overall argument and to my empirical analyses. The ideas and arguments developed in Chapters 2 and 3 are the theoretical basis for the empirical research project that I present in the subsequent chapters. Chapter 4 describes the methodology of the empirical research project, including research questions, hypothesis, data, variables, analytical approach and limitations of the methodology. Chapter 5 reports the finding to Research Question 1 about the role of school sector

differences in educational stratification in Chile and Mexico. Chapter 6 reports findings addressing Research Question 2 about long-term effects of school sector differences on adult socioeconomic destination. Chapter 7 provides a summary of the findings and a discussion of their importance for comparative research on education and social stratification.

Chapter 2

Educational Expansion and Social Stratification

In this chapter I review the sociological literature on educational expansion, educational stratification and social stratification. Institutional theories of educational development and the educational transitions approach in stratification research provide the conceptual framework for my analysis of educational development and social stratification in Latin America.

Educational Expansion

Institutional, Organizational and Individual dimensions

The concept of *educational expansion*, as I use it throughout this study, refers to three basic dimensions or levels of analysis: the institutional, organizational and individual levels. This threefold distinction is a basic analytical tenet of the institutional approach to development (Evans 2005; Portes 2006), organizations (Powell 1991; Meyer and Rowan 1977) and education (Meyer, Ramirez, and Soysal 1992; Ramirez and Meyer 1980).

At an *institutional level*, the notion of educational expansion describes a macro-historical transition in the role of education in society, i.e. from the restricted role that formal education had in pre-modern societies, where it was limited to the elite, towards the *mass schooling* institutional model that we find in the late-modern or contemporary society, where educational institutions have acquired a key function in the socialization and allocation of individuals into roles and in the legitimation of social structure (Meyer 1977).

In pre-modern societies, literacy and formal intellectual training were restricted to a

minority of the population, that were to be put in charge of the most powerful and influential social roles. To be sure, some past civilizations had very elaborate educational systems, but none of them had the massive scope that characterizes modern schooling. In ancient China, for example, a highly ritualized and extremely sophisticated and demanding system of examinations existed to find and select members of the intellectual or literate strata of *litteratis*, who had a leading standing within the Chinese administration and society. Preparation for these exams took years, sometimes decades. Main areas under examination included knowledge of writing and literature, especially poetry, Confucian philosophy and history, but these areas excluded any materially productive skills; their focus was to produce a group solidarity that distinguished their members from the rest of the population (Collins 1977). Candidates from all social origins were allowed to apply, yet only very small proportion of all applicants was selected. According to contemporary estimates, by the end of the nineteenth century, when the number of applicants was at its highest, the chances that an individual would pass the exams were between one and four per million candidates (Suen and Yu 2006). For the lucky ones, success in the exams secured for them every material and symbolic reward that Chinese society had to offer, with the masses of the population allocated to the occupations in charge of the material reproduction, where practical apprenticeship was the most common way to learn and acquire skills (Weber 2009). In Medieval Europe, formal education was found mostly in or around religious seminars and monasteries, where religious congregations such as the Benedictines or the Jesuit created cathedral-schools and monastery-schools for the purpose of expanding the word of God (Durkheim 2013; Collins 2000). European secondary education had an origin in the “colleges” organized by the Jesuits. The larger population was, however, illiterate and by the time the new compulsory schooling laws first appeared, these laws often faced an attitude of generalized “educational indifference” among the European masses (Archer 1979).

Against that background, education expansion describes the radical move towards a

contemporary social world where education is defined as a human right of every individual, and where a massive interconnected network of schools and universities provides educational credentials with uncontested economic and social value (Collins 1977, 2000, 1979; Meyer 1977). That education is a human right of all individuals regardless of origin or condition has been expressed and established in many sources, perhaps most notably in the Article 26 of the Universal Declaration of Human Rights and its numerous reiterations (UNESCO 2000), and in the international campaign of “Education for All” in developing countries (UNESCO 2014). The right to education is embedded in the cultural definition of education as an experience of intrinsic value, that enhances each and every individual’s capabilities and freedoms (Sen 1999). Education attainment is also the basic channel for individual status attainment and upward social mobility (Hout and DiPrete 2006). Yet in addition to being an individual or private good, education is also valued as a public or collective good, as an educated population is seen as a fundamental means for social progress and equality. As Meyer (2001; 2000) points out, even the elite or people without education call for education of other’s people children, and many professionals and social actors, including sociologists and educational researchers, assume the role of advocating for the collective value of education. There is a utopian, quasi-religious element embedded in the belief of the power of education to improve the individual and society. Maximalist expectations are present today in policy speeches given on the global stage, in narratives advanced by development agencies, where educational expansion is treated as the solution for a wide range of social problems (Hannum and Buchmann 2005).

These views of education are distinctively modern cultural constructions that depart from all previous societies in which formal education was seen as appropriate only for a privileged elite or for extremely selected individuals from lower strata (Sorokin 1959). Historically, the emergence in the 19th century of State educational systems in Europe and the United States marked the “take-off” of modern mass education (Archer 1979, 1982; Meyer et al. 1979). The

rise of mass higher education (Schofer and Meyer 2005) and the global diffusion of mass schooling (Meyer, Ramirez, and Soysal 1992) in the aftermath of World War II are two other key institutional developments. Of course, in the developing countries of the Global South these now taken-for-granted notions about education were not the result of long historical processes of learning and trial-and-error selection, as in Europe and the United States where they first arose, but were adopted and partially adapted instead through as a result of the institutional diffusion that accompanied global capitalist expansion (Arnove 1980). Towards the end of his career, Talcott Parsons (Parsons 1971; Parsons and Toby 1977;) described the overall phenomena of educational expansion as an “educational revolution”¹, sharing with other contemporaries such as Daniel Bell the idea that higher education was becoming one of the most important social institutions in advanced or post- modernity (Bell 1973).

At an *organizational level* of analysis, educational expansion refers to the processes of growth and structural differentiation of the school system. School growth is apparent in the steady increase in the number of schools and students that has occurred as ever-wider segments of the world population have been incorporated into the school system for ever-longer periods of time, as shown by rising rates of school enrollment in both industrialized and developing countries since the end of World War II (see Figure 1 below). As is often the case in expanding organizations (Blau 1970), structural differentiation has accompanied the growth of the school system. Two kinds of school system differentiation are essential to my analysis. On the one hand, educational systems have expanded *vertically* through the incorporation of additional grades and levels. With the emergence of secondary schooling, primary schooling becomes preparatory in

¹ Habermas (1989) nicely summarizes the role of education in Parsons theory of modernity: “Parsons understands the industrial revolution that got underway in late-eighteenth century England, the French Revolution of 1789 (and the upheavals oriented to that model), as well as the educational revolution—the expansion of formal schooling that is rooted in the ideas of the eighteenth century but was not radically carried out until the middle of the twentieth— as structural differentiations of the subsystem of the societal community from the economic, the political, and the cultural subsystems. These three revolutions divide the early period from advanced modernity” (p285).

nature, and secondary schooling also can serve a preparatory function for higher education. The nation-state creates “systemization” processes involving legal regulations and provisions for schooling (e.g. compulsory school laws) and the creation of central authorities with administrative authority and capacity (e.g. Ministries of Education) in order to achieve systemic integration of lower and higher educational levels, so that graduation from basic education becomes a precondition for entrance in secondary, and so on (Benavot and Resnick 2006). On the other hand, education systems expand *horizontally*, by differentiating types or kinds of education, either between schools, as in vocational and academic schools or as in private and public school, or within-schools, most notably through curricular tracking by ability groups. There is significant cross-national variation in the organizational structure of school systems, because this is the dimension of educational expansion that is most directly influenced by national and local factors, such as governmental resources and policies and influential corporate and social actors. For example, rates of school enrollment and graduation between industrialized and developing countries differ greatly, especially at higher levels, as a result of differentials in the levels of resources available to sustain a public school system. Also, regarding horizontal differentiation, in some educational systems use early high-stakes testing and tracking between schools, like Germany or Sweden; some systems, like the US, use less visible but pervasive forms of ability grouping and tracking within schools; Asian countries might even use out-of-school private tutoring; while in Latin America the differentiation axis is around school sector. Horizontal differentiation has also been describe as a result of conflict and compromise between egalitarian educational ideology and efficiency-planning ideologies² (Ramirez and Meyer 1980). In sum,

² Ramirez and Meyer (1980): “All modern educational systems are differentiated from other institutional structures, but there is much variation in the degree and the kind of internal structural differentiation. (...) Structural differentiation is higher at the elite levels of the system, but there is much cross-national variation. Elite systems tied to the state may be less differentiated, while those responding more to social and market forces differentiate more. (...) The available comparative research suggests that structures are often the results of such compromises between competing ideologies. (...) Ideological pressures for equalitarian citizenship tend to reduce differentiation, while pressures for the technical legitimation of

even though embedded in common institutional blueprints of mass schooling, national school systems are not generic. They vary in their internal organizational structures and their relationship to society. Different kinds of school system structures create different opportunities for individuals and socioeconomic groups.

At an individual level, educational expansion describes the growing role that schooling plays in individual life. From a life-course perspective, the timing and sequencing of schooling define a key socialization experience in the transition into adulthood, with long terms consequences in terms of social and economic success (Pallas 2000, 1993). The individual-level benefits of higher educational attainment are numerous and well know (Hout 2012). Most theories of educational stratification (e.g. MMI, EMI and Relative Risk Aversion, reviewed below) work at this individual level and assume that families and individuals from different socioeconomic strata compete with one another to secure greater amounts and better types of education for their offspring. They do this in order to avoid downward mobility and maximize opportunities of future success. Qualitative research on school choice parenting offers a variety of empirical examples of how families use their resources to maximize the opportunities of their children through schooling (Saporito and Lareau 1999; Ball, Bowe, and Gewirtz 1996; Schneider, Elacqua, and Buckley 2006).

Educational Expansion and Educational Inequality

Figure 2-1 (below) depicts historical trends in educational attainment during the last six decades for economically advanced and developing countries (Barro and Lee 2013). Developing countries are distinguished by world region, and I also include the world average for all nations in

diverse forms of authority increase it. The American system is a compromise, with much homogeneity at lower levels and much differentiation at higher ones.” (p382).

the dataset. The average educational attainment of the entire world population (aged 15 and over) increased from 3.12 year of schooling in 1950 to of 7.89 years in 2010 – a period of six decades in which the world population itself (aged 15 and over) grew from 1,588 million to 4,759 million. Advanced and developing countries, as well as every world region, followed a similar pattern of steady increase. Advanced countries moved from an average of 6.1 years of schooling in 1950 to 11.3 years in 2010; developing countries had a combined average of 2.02 years of schooling in 1950, reaching 7.2 years six decades later.

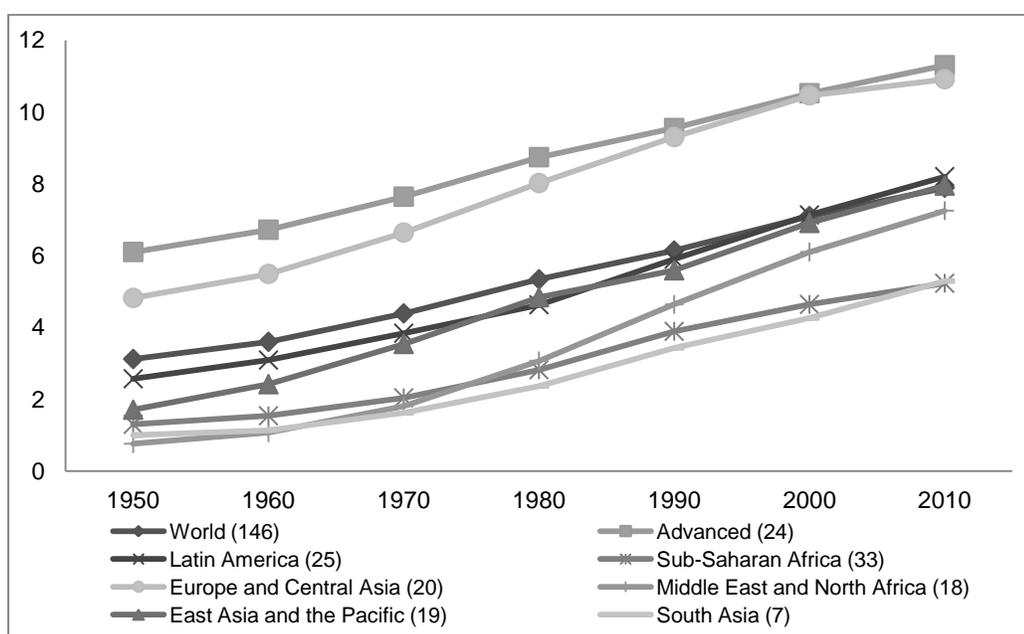


Figure 2-1. Trends in educational attainment by World regions, 1950-2010.

Notes: Data comes from Barro and Lee (2013). Includes populations aged 15 and over. Numbers in parenthesis indicate the number of countries in each group. The total number of countries in the dataset is 146.

Figure 2-1 illustrates the magnitude of the process, as well as the issues with interpretation that it poses. These descriptive trends reveal that absolute levels of educational attainment have increased for all countries, but that inequality between countries has not necessarily declined. In advanced countries this educational upgrading is explained by the expansion of higher secondary and tertiary levels, while in developing countries the upgrading is

due mostly to the expansion of primary and secondary levels (Barro and Lee 2013). According to these estimates, the gap between advanced and developing countries in average years of schooling of the population over age 15 has remained at 4.1 for the last 60 years. Studies looking at worldwide education inequality on a multivariate basis offer a mixed picture. Some suggest that it has declined (Goesling and Baker 2008), while others posit that it has increased by numerous indicators (Kenny 2005). More recently, Dorius (2013) has found a U-inverted pattern in world educational inequality, which first rises and eventually starts to decline. According to this author, the expansion of primary education led first to rising worldwide inequality and it later to its decline, and he suggests that the same is starting to happen in secondary education. This has a resemblance with the “inequality transition” for global income inequality, in which differences between countries first increased and then, towards the end of the 20th century, started to decline at the same time that differences within countries started to increase (Firebaugh 2006).

In this study, however, the main focus will be on the consequences of educational expansion and differentiation on the inequality of educational opportunities within countries. The conceptual and empirical problems of studying differences across socioeconomic groups are very similar: education expands for all, generating absolute increases in opportunity, yet relative differences between groups and individuals do not automatically decline, and often tend to persist. At stake is the distinction between *absolute outcomes* and *relative opportunities*; *outcomes* refers to how a given good (e.g. educational attainment) is distributed at a particular population and point of time, whereas *opportunities* describes the relative chances of having those goods for people coming from different backgrounds. Educational expansion means, by definition, an upgrade in educational outcomes, but not necessarily an equalization of relative opportunities. Referring to ‘educational expansion’ as a homogeneous phenomenon is an oversimplification--different levels of education expand at different rates, and different social classes or groups benefit from educational expansion differently. Also, the nature of educational

inequalities can change with education expansion, and as quantitative differences decline, qualitative differences might become more important. The question of the relationship between educational expansion and the equalization of educational and social opportunities and outcomes is the larger intellectual context of this research. In the next section I review the main theories that have tried to explain the causes of school expansion.

Theories of Educational Expansion: Functional, Conflict and World Society

Social scientists and historians have discussed the economic, political and cultural causes of educational expansion. American functionalism, under its various forms and names (Davis and Moore 1945; Clark 1962; Halsey 1960; Kerr 1973; Bell 1973; Dreeben 1968; Inkeles 1975; Parsons and Toby 1977), theorized that technological change and industrialization create an increasingly complex division of labor, leading to continuous upgrading of the occupational structure, i.e. opening more jobs in sectors that required higher levels of skills. The rise of the bureaucratic State also required an increasing number of skilled white-collar workers to run its administrative structures (Fuller and Rubinson 1992). Educational expansion occurs to fulfill the functional requirements of this growing demand for qualified non-manual workers in the industry and the State. Embedded in this theory was also the expectation, shared by Dewey's and the progressive movement (Dewey 2012), that education would socialize individuals into democratic and meritocratic values, creating the conditions for a shift from ascription to achievement as the basis for the allocation of positions and rewards in society. This general position has also been called the "liberal theory of industrialism", to emphasize the normative commitment of this group of authors with liberal democracy, as existing in the United States, which they conceived as a political system intrinsically complementary with a market economy (Erikson and Goldthorpe 1992).

Coming from very different theoretical origins, scholars of the so-called “conflict theory” school argued that political elites in control of the State apparatus constructed public schools as a device of ideological control to advance their own class interests (Apple 1979). For the critics, functional theories were blind to the oppressive character of schooling and to education’s function of reproduction and legitimation of the class inequalities of industrial capitalism (Bowles and Gintis 1976). Similar skepticism about the emancipatory and democratic effects of education expansion manifested itself in Europe with the emergence in the early 1970s of the “new sociology of education” (Young 1971), which argued that schools, often against the will of teachers and other educational actors, granted advantage to privileged and middle class students through mechanisms such as cultural capital (Bourdieu 1973) or linguistic codes (Bernstein 1971), disguising and legitimizing systematic bias under a fake meritocratic veil. Radical critiques of schooling during the 1970s and 1980s perhaps reached their extreme in the calls for the *deschooling* of society (Illich 1971).

As educational expansion intensified in the second half of the 20th century, the idea that education was expanding “too much”, that graduates were “overeducated” for the kinds of jobs available in the economy, or that the educational race producing “credential inflation” had reached functionally “irrational” levels, became a major political and research issue (Berg 1970; Collins 1979). In her influential study of the development of school systems, Archer (1982, 1979) distinguished between three stages: take off, growth and inflation. Archer wrote that at a certain stage of its development, the educational system reaches such a size, internal complexity and operational autonomy (i.e. capacity for self-determination), that “it becomes increasingly independent as a social institution and decreasingly regulated by other parts of society”, (Archer 1982, p42). Thus, the educational system becomes “something that anybody wants”, with educationally aspirational individuals being “both the victims of the expanding context and the source of their own victimization”, and the system as a whole turns into something that has been

“produced by human interaction but escap[es] its control in Frankenstein fashion” (p43). Public schooling, which started as an almost magic solution to every problem, ends, in the conflict sociology of education of the late 1970s, as being compared to a monster. In *The Credential Society*, Collins offers a similar account in his study on credentialism, where the democratic and technological relevance of mass schooling is portrayed as an empty myth (Collins 1979).

The importance of cultural factors as drivers of mass schooling gained force as mass schooling expanded internationally to the post-colonial world of developing nations, where neither strong industrial economies nor strong bureaucratic States existed. Why was a similar institutional model of mass schooling and higher education expanding globally since the decades after World Word II, even to countries with little industrialization? The work of Meyer and his colleagues at Stanford University, which grew out of neo-institutional research in the sociology of organizations (Meyer and Rowan 1977; Meyer 1970, 1977), organized itself around this question. Based on a large series of comparative studies on patterns of education expansion around the world (Meyer et al. 1977; Boli, Ramirez, and Meyer 1985; Fuller and Rubinson 1992), Meyer and colleagues concluded that worldwide educational expansion was not the result of the functional-technical requirements of industrialism, but rather an essentially cultural phenomenon of global diffusion and convergence towards the institutional project of Western modernity. Their studies looked at enrollment in public schooling and higher education and showed a clear historical trend of educational expansion associated with integration to the so-called “world society” – as measured by indicators such as the number of democratic governments, scientific associations, national development plans and international nongovernmental organizations (Schofer and Meyer 2010). Institutional expansion does not occur because every single country invented schooling on its own as part of an isolated industrialization process, but instead because a similar institutional model of schooling (based on what some have called the “grammar of schooling”, Tyack and

Cuban 1995) diffuses internationally with the advent of modern nation-state and the global society.

Educational Expansion in Classic Sociology

Before I get into contemporary stratification research, let me take a brief detour to review the way educational expansion appears – or fails to appear – in the works of the “founding fathers” of sociology, Max Weber, Karl Marx and Emile Durkheim. My reading of the sociological heritage on the topic of educational expansion is twofold. First, I suggest that the profound sociological magnitude of the process was only partially accounted for in classic sociology. The reason is quite obvious: mass schooling and mass higher education were still at an early stage of development by the time other distinctly modern institutions, such as the capitalist economy or the nation-state and its bureaucratic organizations, were already fully observable historical processes. On the other hand, even though their accounts of educational expansion were necessarily partial, key contributions to the topic can be found in their writings.

Functional theories of education can certainly be traced back to Durkheim. He thought that demographic change and the division of labor drove the transition from a traditional society to a modern society, which in turn changed patterns of social solidarity. In other words, economic change and industrialization produced a cultural change in the norms that held society together. In this context, Durkheim saw schooling as a device that could provide modern moral values. Primary schooling became free and compulsory in France under the Ferry Laws of the early 1880s, but the implementation of the laws was slow, and the massification of higher educational levels was still far out of sight during Durkheim’s life. He spent much of his professional career teaching in schools of education, and the lectures he gave to prospective teachers in 1904 and 1905 about the history of education in France, later published in English as *The Evolution of*

Educational Thought (1977), can be considered, as Bidwell (2006) argues, as the first institutional analysis of the educational systems. Durkheim thought of public schools as miniature reproductions of social life that instilled children with secular moral values useful to maintaining social solidarity and cohesion against the normatively anomic tendencies of industrial society (Durkheim 1956, Arum and Beattie 2000). However, he did not perceive the autonomous, self-reinforcing nature of the educational expansion process, and the important notion, advanced by later institutional analysis (Meyer 1977), that an expanded educational system might work, in some ways, as an “independent variable” of social change³. All in all, Durkheim’s analysis of education remains the least known and most “unpopular” (Walford and Pickering 1998) of all his sociological work.

Both Marx and Weber, who introduced the essential conceptual categories to the study of social stratification (i.e. the notions of social class and status groups, respectively) nevertheless paid little attention to formal education. In the case of Weber, it is remarkable that he conceived of the idea of a comparative study of education in different civilizations, but he did not pursue it. Weber even got to the point of apologizing to his readers for limiting his analysis of education to “some comments” written “in passing”⁴. Even so, in this oblique manner Weber managed to provide key insights about education expansion, in texts that referred to other topics, such as the development of bureaucratic organizations or the sources of status in the Chinese literati. For Weber, the expansion of bureaucratic forms of organization, most importantly in the administration of the modern nation-state and of the capitalist-firm, increased the demand for expert training and credentials as pre-conditions for access to positions. He further argues that

³ For example, as when Durkheim writes that education is “only the image and reflection of society. It imitates and reproduces the latter in abbreviated forms: it does not create it” (Durkheim 1897, quoted by Walford and Pickering 1998)

⁴ In the introduction to his study of Confucian education, Weber (2009) wrote: “We shall now discuss the position of this educational system among the great types of education. To be sure, we cannot here, in passing, give a sociological typology of pedagogical ends and means, but perhaps some comments may be in place. (...) The numerous combinations cannot be discussed in this context” (p427).

bureaucracy takes them to the extreme and generates a “universal clamor for the creation of educational certificates in all fields” (241). Importantly, Weber wrote that the reason behind this universal clamor was not a “suddenly awakened thirst for education”, but rather that credentials are means for the attainment of social status and its associated rewards⁵. Based on these materials, Bidwell (1989) is half right when he writes, “Weber’s ideas prefigured the recent wave of research on education and status attainment” (40). What he and many others do not seem to acknowledge is that these pieces are scattered widely in different parts of Weber’s writings and, as a whole, are more isolated insights than a systematic theory. As a result, education as a social institution did not play any major role in Weber’s general analysis of social change in modern society, and schooling remained pushed aside as a serious theoretical concern or problem.

Something similar can be said about Karl Marx. Contemporary conflict sociology of education would be incomprehensible without the legacy of Marx, and however he hardly ever wrote a word on formal education, an institution he did not seem to consider to be of independent importance for stratification in capitalist society or any other. Later scholars, inspired by his legacy, would conduct critical, Marx-inspired analysis of contemporary educational systems, commonly assigning them a more active ideological role and describing schooling as devices to justify economic inequality and reproduce the capitalist class structure.

⁵ The full passage is this: “Educational institutions on the European continent, especially the institutions of higher learning –the universities, as well as technical academies, business colleges, gymnasiums, and other middle schools– are dominated and influenced by the need for the kind of ‘education’ that produces a system of special examinations and the training expertness that is increasingly indispensable for modern bureaucracy” (p240). “When we hear from all sides the demand for an introduction of regular curricula and special examinations, the reason behind it is, of course, not a suddenly awakened ‘thirst for education’ but the desire for restricting the supply for these positions and their monopolization by the owners of education certificates (...) Such certificates support their holders claims for intermarriages with notable families, claims to be admitted into the circles that adhere to codes of honor, claims for a respectable remuneration rather than remuneration for work done, claims for assured advancement and old-age insurance, and, above all, claims to monopolize socially and economically advantageous positions” (241). In Weber (2009).

Overall, these classic theorists did not link educational expansion and social stratification in a systematic manner. Marx wrote on class stratification but not on education. Weber linked them but unsystematically. Durkheim made the link between social changes and educational changes, but he analyzed how education as produced new modern values, not how education changed the patterns of social stratification and mobility. Taken as a whole, the classic theorists produced a set of scattered insights that do not amount to a comprehensive account that can rival the work they formulated for other social institutions. When Durkheim, Weber and Marx were writing, schools were not yet as important for individual and social life as they are today; therefore, the founding fathers of social science had good reason not to place schools at the center of their theories of modernity and social change. That said, this elision leaves a vacuum that contemporary sociology has struggled to fulfill. It is the task of contemporary sociology to bring educational expansion and its consequences to the forefront.

Social Stratification

The Social Stratification Model

Against the background of escalating, contradictory claims about the virtues and sins of schooling between functional and conflict theories of education in the late 1960s, Blau and Duncan (1967) conducted their groundbreaking path analysis of the American occupational structure, where they established that education is the main factor in *both* upward mobility and the intergenerational reproduction of socioeconomic status. Figure 2-2 shows a simplified version with the essential or basic components of their stratification model.

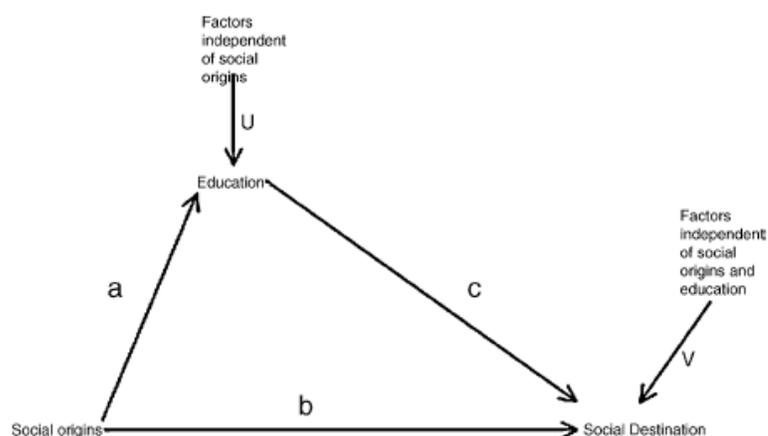


Figure 2-2. The social stratification model (basic components).

Source: Hout and Diprete (2006) based on Blau and Duncan (1967).

The model established a clear empirical strategy to understand and measure the basic elements and relationships involved in the stratification process. The basic elements were three: social origins, measured as parental education and parental occupation; social destination, measured as individual occupation; and educational attainment, measured as years of schooling.

In this model, education has a dual role: the part of the education variance that comes from social origins (*a*) produces an indirect reproduction path through the product of *a**c*, and the part of educational attainment that is independent of origins (*u*) contributes to intergenerational social mobility through the product of *u**c*.

Key concepts were defined and measured here in a way that influenced later research developments; each path of the model became the source of a research literature of its own. The “direct reproduction” path, or (*b*), which referred to the net association between socioeconomic origins and adult destinations, became the research focus of the comparative literature on social mobility. The “inequality of education opportunity” path, or (*a*), which referred to the association between social origins and educational attainment, became the focus of the educational transitions approach. Below I review both of these literatures, as they provide important context for this research.

Four Generations of Comparative Stratification Research

Blau and Duncan's study is part of what is known as the "second generation" of comparative stratification research (Treiman and Gazenboom 2000). In the first generation, international studies of social mobility had already posed a critical stance against the early, optimistic functionalist theories of education and industrial society. Lipset and Zetterberg (Lipset and Zetterberg 1959), based on their analysis of the data appearing in the post-war period, argued that Western industrial nations shared a similar and stable overall pattern of *absolute social mobility* (i.e. as measured by actually observed mobility rates), thus denying the functionalist notion that social mobility was increasing over time with industrialization. As later analysis showed significant variation in actually observed mobility rates (a.k.a. "structural mobility") across industrial nations, Featherman, Jones and Hauser (FHJ) (Featherman, Lancaster Jones, and Hauser 1975) reformulated the Lipset and Zetterberg (LZ) hypothesis and claimed instead that, net of absolute structural changes, patterns of *relative social mobility* were "basically the same" across all industrial nations. Both the LZ and the FHJ hypothesis have been interpreted as contemporary versions of the older sociological insight Sorokin (1959), who famously denied teleological claims of progress in human history, and understood contemporary changes in stratification and mobility patterns as short-term observable components of long-term historical "trendless fluctuation".

The so-called third generation of comparative research on social stratification emerged with the Comparative Analysis of Social Mobility in Industrial Nations or CASMIN project and its main product, *The Constant Flux* (Erikson and Goldthorpe 1992). The original CASMIN project included 12 industrialized countries and used a uniform methodological protocol based on the analysis of mobility tables with log-linear and log-multiplicative techniques. Later research expanded this approach to additional countries, including Brazil and Chile (Torche 2005b;

Ribeiro and Scalón 2001). Overall, this generation found what is known as a common pattern of social fluidity. “Some countries have relatively open class structures and/or hierarchies that are readily breached by upwardly mobile persons from less privileged origins; other societies are relatively closed to intergenerational mobility. These are differences of degree but not kind” (Hout and DiPrete 2006).

A fourth generation is looking at how the institutional and organizational contexts affect stratification and mobility patterns, through the use of quantitative techniques (“variable-oriented” research on how much inequality there is) and qualitative analysis (“case-oriented” research on how and why specific contexts matter) (Pfeffer 2008). This dissertation project can be seen as a contribution to this fourth generation of stratification research as I look at how a particular institutional context, that of educational expansion and of policies regarding private schooling, affect the allocation of educational and occupational opportunities in Chile and Mexico.

Educational Stratification

Growing out of research on social stratification and mobility, what came to be known as the Educational Transitions Approach (ETA), as well as the extensive literature on educational stratification⁶ organized around it, asked the basic question of whether the effects of family background on educational attainment had changed over time as a result of educational expansion. ETA started with a series of articles by Robert Mare (1979, 1980, 1981, 2011; 2006)

⁶ Following this tradition, in this document I use the terms “educational stratification” and “inequality of educational opportunity” interchangeably; both refer to the effect of family socioeconomic background on educational attainment. They are conceptually different from “social stratification” (which indicates socioeconomic or class inequality of condition and is measured through occupational schemes or gradients of socioeconomic status) and to “social mobility” (which is the intergenerational association between socioeconomic origins and destinations and reflects equality of opportunity).

who argued that previous research⁷ failed to distinguish between two basic dimensions of educational stratification: the *distribution* of education (which is a univariate measure of the dispersion of schooling and indicates inequality of educational outcomes) and the *allocation* of education (which refers to the multivariate association between schooling and family background and indicates inequality of educational opportunity). The problem with confounding these two dimensions is that they lead to misinterpretation; it looked like inequality was going down over time, Mare argued, but it actually was not. Using data for the United States, he showed that school expansion systematically changed the *absolute* distribution of education (i.e. increased rates of population educational attainment) without altering the *relative* allocation of education to different social strata (i.e. similar socioeconomic background effects over time). Mare developed his logistic model of school continuation (a.k.a “Mare model”) in which educational stratification is the weighted sum of the conditional effects of family background on each one of the transitions included in a student’s educational career (e.g. transition into secondary, completion of secondary, entrance into post-secondary, completion of college, etc.). Mare’s innovation was methodological –to control for the effects on school expansion by using conditional logistic regression to estimate the likelihood of making subsequent transitions– but also had strong substantive implications: the effects of family background decrease across transitions (i.e. association tends to be weaker at higher educational levels) but persist across cohorts, only at higher educational levels.

Research on educational stratification moved away from the linear regression approach and replicated Mare’s logistic regression procedure in several countries of the world. A major comparative project applying Mare’s protocol for thirteen industrialized countries found that the association between social origins and school transitions had not declined over time despite the

⁷ These previous studies (e.g. Duncan 1968; Hauser and Featherman 1976) used linear regression and continuous measures of years of schooling as the dependent variable, as opposed to sequential logit model introduced by Mare.

massive increase in population rates of educational attainment –a finding that was coined as “persistent inequality” of educational opportunity (Shavit and Blossfeld 1993; Bar Haim and Shavit 2013).

The “persistent inequality” finding became a research landmark, even though the finding was not universal; two cases included in the original Shavit and Blossfeld study, for Sweden and Netherlands, did report equalization trends. Breen (2009) contested the persistent inequality finding in a study, reporting a decline in inequality in a larger pool of European countries than originally reported. However, Breen’s analysis considered only social class as a measure of social background, and not parental education. This is a substantial limitation, because the effects of parental education tend to be larger, and more resistant over time, than those of father’s occupation (Shavit, Yaish, and Bar-Haim 2007; Pfeffer 2008). For this reason, the persistent inequality finding has preserved its centrality as a point of reference in the field, and inequality of educational opportunity in terms of the effects of *both* parental occupation and parental education. In this research, I consider both measures of family background in each one of the statistical models.

Forms of Educational Stratification: Vertical and Horizontal

There are two major theoretical attempts to explain why expansion has not consistently reduced educational stratification. The first one is the Maximally Maintained Inequality (MMI) hypothesis (Raftery and Hout 1993). MMI states that school expansion does not necessarily reduce education inequality across social strata because privileged groups increase their educational levels faster than or as fast as unprivileged groups. It is only when the upper strata reaches saturation at any given educational level, the MMI argument goes, that equalization driven by educational expansion would be expected at that level. MMI further suggests that

educational expansion is not a homogeneous phenomenon that happens at all levels for all groups simultaneously; instead, different levels of education expand at different rates, and different social classes or strata benefit from educational expansion differently depending on the stage of the process. Yet, in the more advanced countries, reaching the point of elite saturation and massive access to higher education, MMI predicts that the overall level of educational inequality will decline. In this way, Hout (2006) writes that his “perspective points to universal access as a key to removing class barriers” (p.249).

Substantial qualification of these propositions came from a second position, the Effectively Maintained Inequality (EMI) hypothesis (Lucas 2001, 2009). The EMI critique of MMI starts by acknowledging the multidimensionality of education, i.e., the basic empirical fact that in addition to quantitative or “vertical” differences in grades or levels (measured in years of education or transitions completed), most educational systems have some kind of qualitative or “horizontal” differentiation. The educational career cannot be reduced to a simple single sequence of irreversible transitions in systems with early between-school tracking such as those existing in several European countries (Breen and Jonsson 2000, Ayalon and Shavit 2004) or with within-school curricular tracking, as in the United States (Lucas 2001). Differences between academic and vocational classes or schools, or based in institutional selectivity (selective v. non-selective schools) or school sectors (public v. private schools) are also examples of the horizontal differentiation of schooling (Gerbert and Cheung 2008; Ayalon and Shavit 2004). Alternative horizontal placements have different expected probabilities of future school continuation and, potentially, of labor market outcomes. The Mare model, based on a single sequence of binary alternative, does not capture the multiple and unordered nature of choice alternatives. As a result, statistical models for an expanded number of outcomes, such as the multinomial logistic or the ordered probit model have been introduced to the modelling of these horizontal placements. Even universal education, EMI argues, is unlikely to reduce inequalities because quantitative

differences are replaced by inequalities in the probability of attending a qualitatively better or more selective type of education⁸.

MMI and MEI are forms of rational choice theory applied to education, that is, they assume that parents and children make rational decisions about school continuation and educational placement based on the costs, benefits and success probability of educational alternatives. Boudon (1974), one of the most distinguished figures of the tradition of methodological individualism in sociology, is often cited as the intellectual grandfather of this approach applied to education inequality. Because parents have a major role in the educational decisions individuals make, differences in parents' economic, educational and cultural resources are key individual-level explanatory mechanisms of the individual decision-making process. According to Hout (2006), rational choice theories applied to education emerged as an attempt to improve upon conflict theories that explained educational stratification by "resorting to hypotheses about a conspiracy among elites or efficacious class action" (p249). Their obvious limitation, however, is that they work at a merely individual-level, without considering the institutional and organizational contexts condition that influence the opportunity structure of family and student choices (Pfeffer 2008).

What are the organizational sources of horizontal stratification in education? A common answer has been that educational expansion leads to educational differentiation. The proposition has roots in organization theory and the proposition that organizational growth leads to differentiation (Duncan 1970). However, there is no consensus about the generalizability of this theory to school systems, and it has been noted that "several initially complex small systems – such as that in the Netherlands – have simplified as they have taken on ever larger fractions of

⁸ EMI also advances a non-statistical argument: if universal access reduced inequality to zero, as suggested in MMI, we would not find social conflict around the conservation of institutional arrangements that differentiate education horizontally, such as the cases of local resistance to de-tracking initiatives documented in the United States by qualitative researchers (Oakes 1987; Lucas 2001).

recent cohorts” (Hout and DiPrete 2006, p8). Shavit, Arum and Gamoran (2007) have applied this notion in their comparative study of horizontal stratification in Europe.

The distinction between vertical and horizontal forms of educational stratification has a strong potential to account for changes in the context of expanding schools systems. However, research in educational stratification has not yet explored the diversity of organizational forms of horizontal stratification around the world systematically. Current theory is based on the experience of the industrialized countries: within school tracking (Lucas 2001) and between school tracking (Breen and Jonsson 2000). Qualitative stratification based on school sector and academic selectivity (private elite universities) have also been studied for the US and Europe at the tertiary level (Shavit et al. 2007). But in developing countries, forms that rely strongly on parental financial resources might have a large importance. Recent comparative research suggests that private schooling is an important source of horizontal stratification in Latin America (Torche 2005a; Marteleto et al. 2012) and other regions (Forsey, Davies, and Walford 2008). Also private tutoring and shadow education can be seen under this perspective, as I argue below. In my dissertation, I argue that distinct forms of qualitative inequality of education opportunity exist cross-nationally. Furthermore, I discuss the social forces that have led to stratification by private schooling in Latin America, and also to cross-national differences between region.

Private Schooling as Horizontal Stratification

A basic tenant of this study is that private schooling can be understood as a form of horizontal stratification. This idea is not original since it has already been advanced by at least two other studies looking at education inequality in Latin American (Torche 2005a; Marteleto et al. 2012). However, it has not yet made its way into the mainstream of stratification research, which remains mostly focused on curricular tracking among secondary schools as the basic form

of horizontal stratification (Lucas 2001; Breen and Jonsson 2000). For example, a recent comparative international study that adopted the distinction between vertical and horizontal stratification to assess the equity of school systems around the world did not include private schooling as a measure of horizontal stratification (OECD 2013)⁹. This illustrates the importance of demonstrating the role that school sector differences play in Latin America (and potentially in other regions) as a way to further our comparative understanding of stratification processes in education and society at large.

The literature on school choice clearly demonstrates that the decisions and choices faced by families in order to secure educational opportunities for their offspring can be quite diverse and complex, especially when we consider it from an international comparative perspective (Chakrabarti and Peterson 2008; Forsey, Davies, and Walford 2008). Research shows that families may actively pursue schools of their preference through a variety of means that range from activating social networks to gather information to making housing decisions based on school district limits (Holme 2002; Ball and Vincent 1998). Families can pursue schools based on perceived differences between public and private schools and also differences between schools within the same sector, that is, different types of public schools or different types of private schools. Categorical distinctions between and within school sectors are introduced and institutionalized through policies such as school vouchers, charter schools, magnet schools, or others. A basic question of the school choice literature is whether these kinds of school choice

⁹ In the referred OECD (2013) report, vertical and horizontal are defined in the following terms: “Vertical stratification refers to the ways in which students progress through school as they become older. (...) Horizontal stratification refers to differences in instruction within a grade or education level” (. Measures of vertical stratification include variation in age of entry into primary school and grade repetition. Measures of horizontal stratification distinguish two forms: between schools forms (number of educational tracks, prevalence of vocational and pre-vocational programmes, early selection, academic selectivity and school transfer rates) and within school forms (ability grouping). The report finds that vertical and horizontal stratification of the school system tends to be negatively related with the equity of student outcomes, as measured by PISA 2012.

policies are likely to increase or reduce the socioeconomic stratification of educational opportunities (Witte 2009; Viteritti 2010; Lubienski, Gulosino, and Weitzel 2009; Carnoy 1998).

Because of tuition and other financial costs potentially associated with private schools, we tend to assume that private schools are attended by only by the wealthy. However, comparative studies show that significant cross-national variation exists in the patterns and levels of socioeconomic stratification between public and private schools. According to a recent OECD report based on PISA 2009, in most countries, private schools receive students that indeed come, on average, from more advantaged socioeconomic backgrounds, yet there are countries like Indonesia or the Netherlands where the socioeconomic gradient is inverse and public schools receive socioeconomically advantaged students (OECD 2012a). The report finds that stratification is lower in countries with larger governmental subsidies for private schools, yet the causal mechanism is unclear. An explanation is that governmental subsidies are usually attached with more curricular and organizational regulations, which in turn can lead private schools to resemble and eventually “assimilate” with their public counterparts. This pattern of isomorphic assimilation of private schools into the public school system has been reported for the case of American Catholic schools (Baker 1999).

An additional finding of this OECD (2012) report is that the association between student SES and private school attendance is higher in Latin America than in any other world region (see Figure 1 in Appendix). Consistently, research by Marteleto et al (2012) reports an increase in the effect of family SES on private school attendance in Latin America during the 2000s. Their analysis is based on nationally representative household surveys in Brazil, Mexico, Chile, and Uruguay, and finds two major regional trends: economic growth during the 2000s allowed for large advances in educational enrollment that, on the one hand, reduced vertical inequality in the completion of secondary schooling but, on the other hand, increased the horizontal inequality associated with private schooling attendance. Of the four countries under study, Mexico was the

only exception where the socioeconomic between public and private schools did not increase; Chile was the country with the largest increases in family SES effects on private school attendance. This regional trend was suggested by Torche (2005a) in her study of Chilean educational and social mobility, where she called for new research on “parental investment in quality and not only quantity of education to further understand the mechanisms of intergenerational reproduction in Chile” (p191).

Interestingly, Asian countries like Korea, Japan or Hong Kong present very low (below OECD average) levels of stratification between public and private schools in the OECD study. In these countries, however, private tutoring is known to have a large role in structuring educational opportunities and outcomes through the massive “shadow education” systems (Baker et al. 2001; Bray and Lykins 2012). Family background is positively associated with consumption of private tutoring (Kim and Park 2010). In Canada, where private school stratification is slightly above than OECD average, private tutoring represents a form of “school choice by default”, that is, an affordable alternative to private schools (Davies 2004). If we follow this lead and understand private tutoring as a form of school choice in its own right, then it becomes even more necessary to broaden the current definition of horizontal stratification to account for the international experience.

As a way to go beyond the narrow focus of previous stratification research on curricular tracking, I would broaden the definition of horizontal stratification and define it as *any kind of formal educational experience occurring outside of the family that alters the distribution of educational opportunities among students attending the same grade or level*. From this perspective, private tutoring and private schooling can be included as two important institutional forms of horizontal differentiation that can channel socioeconomic stratification, yet have not been adequately considered under the educational transitions framework.

Summary

In order to set up my study of whether and why school sector differences are emerging as a key mechanism of educational and socioeconomic stratification among Latin American countries, throughout this chapter I have reviewed the literature on educational expansion and social stratification. I rely heavily on two particular traditions: institutional theories in the sociology of development, organizations and education, and also research in social stratification and mobility, particularly the educational transitions approach. Stratification research provides the analytical tools to look at the specific mechanisms that explain stability and change in educational stratification within particular countries, and institutional theory helps to situate and understand those mechanisms in the context of the international processes of institutional and economic exchange opened by globalization in the contemporary society.

I have argued that school systems around the world share very similar *institutional* blueprints around the mass schooling model, while at the same time there is notorious *organizational* variation in the actual patterns of growth and structural differentiation observable across countries, due to differences in local resources, politics and cultural legacies. If institutional models and organizational practices are “loosely coupled” (Meyer and Rowen 1977), then educational expansion can be seen as a dual process that, on the one hand, fosters institutional convergence around the values and blueprints of mass schooling as they are increasingly institutionalized at a global scale, through the network of international organizations and actors (Baker and LeTendre 2005), and on the other enables cross-national differentiation in school system structures because any particular country puts those blueprints into practice based on a particular set of resources, policies and traditions. Further structural chances become “path dependent” (Campbell 2004) . In looking at Latin America, I use this framework to analyze commonalities and differences in the institutional structures of schooling in Chile and Mexico.

Stratification research, and particularly the educational transitions approach to educational stratification, provides the framework to analyze the link between school structures and *individual* opportunities. In particular, the MMI hypothesis and the EMI hypothesis suggest individual-level mechanisms through which elite and middle class families might react to the equalization potential of universal education. In my empirical study of educational expansion and school sector on Chile and Mexico, I will attempt to make a contribution to this literature by discussing and expanding the concepts of how vertical and horizontal stratification of educational opportunities relate.

Chapter 3

Educational Expansion and Social Stratification: The Latin American Experience

In this chapter I build upon the general analytical framework reviewed in Chapter 2 to analyze the links between educational expansion, school sector, and educational and social stratification in Latin America, with a focus on Chile and Mexico. The chapter is divided in three sections. First I offer a historical overview of educational expansion in Latin American, from the Colonial times up to the present. I identify five historical periods and within each period I highlight regional similarities and national differences for Chile and Mexico. In the second section I review recent empirical research on Chile and Mexico during the last decades that will inform the empirical analysis. The third section offers a summary of the chapter.

Educational Expansion in Latin America, 1500-2010

Educational expansion in Latin America has consisted in a process of gradual institutional change interrupted at several points by specific historical events that altered, in one way or another, the contexts and the paths of educational development in the region and within countries. In this overall process of “punctuated evolution” (Campbell 2004), five major historical periods can be distinguished: (1) the three-hundred years Colonial period; (2) the nation-building period that goes from independence in the early 19th century until the first decades of the 20th century; (3) the post-World War II “miracle period” of import-substitution industrialization and educational expansion (1950s-1970s); (4) the “lost decade” period starting with the debt crisis of the 1980s and the subsequent structural adjustment policies; and (5) the contemporary democratic

growth period (1990s-2000s). These analytical periods are based on several historical accounts of Latin American education (Levy 1982; Gvirtz and Beech 2008; Torres Septién 1997; Rama 1983; Benavot and Resnick 2006; Newland 1991, 1994). These periods of educational expansion closely parallel periods of social and economic development in Latin America (Wood and Roberts 2005; Knight 1998).

Colonial Period: 1500s-1700s

During the Latin American colonial period, the Spanish and Portuguese monarchies, both of them Catholic, used education as a religious and political device. Literacy was an important tool of power for the Colonial administration because much of the official communication and economic transactions between the metropolis and the colonies was organized and conducted in written documents (Graff 2007). Catholicism itself was a religion that required literacy skills because the Gospel of God is revealed to men through a sacred book, the Bible. The most important educational development in Spanish America during the Colonial Period was the creation of colonial universities. They were administered under the joint authority of the Spanish Crown and the Catholic Church, and emphasized legal and theological instruction. The institutional model was the University of Salamanca in Spain. The University of Santo Domingo (1538), Peru's University of San Marcos (1551), and Mexico's Royal and Pontifical University (1553) were among the first to open after receiving a Papal bull and/or royal authorization. By the end of the Spanish colonial era, there were about twenty-five universities of this kind in Spanish America. The authority of the Church was guaranteed through a number of bureaucratic practices and devices. For example, all university heads were clergy, and they included a figure called the *maestrescuela*, "a liaison officer between university and church who had certain powers over examinations" and who was a "second-in-command behind the rector" (Levy 1982, , p95). These

universities served mostly the Spanish elite and their descendants born in the American continent, known as *criollos*. At lower educational levels, the Crown was in charge of a reduced number of basic schools (*escuelas de primeras letras*). Also, private tutors (*preceptores*) were used by Spanish families to teach their children and young to read and write. In terms of education for the larger indigenous population, after much theological debate, Pope Paul III acknowledged in the year 1537 that the indigenous population of the Americas were human being and had souls. Therefore, he decreed that they could be educated. Catholic congregations such as the Jesuits or the Franciscans established missions and schools as a means of evangelizing the indigenous population. Evangelization was first conducted in indigenous language, and then in Spanish. These missions also established separate elite schools to educate the children of Spanish colonial officials. Still, towards the end of the colonial period, in 1800 the literacy rate among the Spanish American population was still less than 10% (Newland 1991).

Nation-Building Period: 1800-1950s

The second period of institution-building of State-sponsored national school systems started with the independence of Latin American nations in the early 19th century, and lasted until about the middle of the 20th. After independence, Latin American nations went through a process of partial “elite replacement”, in which power was wrested from the small group of Spain-born, Crown-appointed officials generically known as Royalists (*realistas*), and vested in a new elite of pro-independence individuals known as *criollos*, who had been born in the Americas, but had been excluded from positions of power (e.g. administration, military) due to Crown regulations. Replacement was only partial rather than complete because *criollos* came from Royalist parents, for the most part were Catholic, and identified themselves with the legacy of white European

civilization and not with the masses of *mestizo* and indigenous population that they were now set to govern upon.

The political elites of the new-born Latin American nations explicitly and quickly embraced the institutional project of mass education as a way to acquire the cultural and material advances of Western civilization. In this period, in the context of the growing influence of the French and American Revolutions, the institutional model previously provided by the medieval Universities of Catholic Spain was rejected in favor of the French “Napoleonic” model of public schooling: free, secular schools were created that were centralized in organization (i.e. run by national ministries of education), nationalistic in ideology and had a strong emphasis in moral education (Gvirtz and Beech 2008). Comte’s positivism, with its emphasis on the importance of science for “order and progress” (as the motto of the Brazilian flag goes) was an influential doctrine in many Latin American nations during the 19th century, including Chile (Jaksic 2010) and especially Mexico, where so-called “Mexican positivism” became the nation’s official cultural policy during the dictatorship of Porfirio Díaz (1875-1911) (Zea 1980). The “common school” movement in the United States also provided an important international model for Latin American elites seeking to use education for nation-building in the aftermath of independence.

The mechanisms of international diffusion of these early modern educational ideas among Latin American reformers are well exemplified in the figure of the Argentinean Domingo Faustino Sarmiento, a prominent writer, intellectual and politician of the period. In the 1840s, Sarmiento was sent by the Chilean government to visit and study the nascent school systems of Europe and the United States, receiving first-hand personal advice from influential educational reformers such as Francois Guizot, Horace Mann and others. On his return, Sarmiento published extensively on public schooling as tools for science, democracy and progress, and when he eventually assumed important political positions, such as the Argentinean presidency, Sarmiento advanced foundational educational reforms, including the introduction of compulsory education

in Argentina. According to Sarmiento's most famous statement, Latin American nations faced a clear-cut choice between "*civilización o barbarie*", i.e., between the rationalistic values of Western civilization or the perceived "barbarism" of traditional indigenous cultures; mass public schooling was seen as the fundamental mean for carrying out this transition (Sarmiento 1915; Celarent 2011). This kind of Enlightenment-like "pedagogical optimism" had local representation in every Latin American nation, including Manuel de Salas, Camilo Henríquez and Juan Egaña in Chile and Jose María Luis Morales, Lucas Alemán and Valentín Gómez Farías in Mexico (Newland 1991).

All independent nations in Latin America established national laws of compulsory schooling by the end of the 19th century, but the organizational implementation was much slower. The normative and political commitment to mass schooling settled before any real industrialization process occurred in the region, and therefore implementation was challenging and severely limited by the weak State capacity and scarce resources available to invest in building schools, the training teachers or the acquisition of learning materials, etc. (Benavot and Resnick 2006). Early in the 19th century, the Lancaster method appeared for a while as an attractive educational policy for Latin American states unable to fund a universal primary school system, but the outcomes were disappointing and it was soon discarded (Newland 1991). In Mexico, federal education laws were passed in 1867 (Benito Juárez's *Ley Organica de Instrucción*) and 1892 (Porfirio Díaz's *Ley Reglamentaria de Instrucción Obligatoria*), although in practice, by the turn of the century only the urban middle and upper classes had access to school, while the poor, the rural and the indigenous populations were for the most part left out (Álvarez 1987). In Chile, national primary school laws passed in 1860 (*Ley de Instrucción Primaria*) and in 1920 (*Ley de Instrucción Primaria Obligatoria*). At the turn of the 20th century, school enrollment rates were noticeably lower in Latin America than in European and North American nations. For example, Argentina, Uruguay and Chile had the largest regional rates of

primary enrollment in the 1900s (roughly 30%), while countries like the United States, Canada, France and Germany had already reached or were almost reaching universal primary education (Benavot and Riddle 1988). Limited educational access had important political consequences because in many countries, including Chile, Peru and Bolivia, illiterates were denied the suffrage, leading to oligarchic political regimes that were a common political structure of Latin American countries during the 19th and part of the 20th century (Gale 1969).

The organization of the national school systems advanced slowly but steadily during the first half of the 20th century, leading to the construction and expansion of a common institutional framework that is usually referred to as the *Estado Docente*, literally the “State as Teacher” (Newland 1994). During this period, Latin American countries followed the so-called “outward development” strategy, where the economy was based and oriented towards the export of primary commodities, often the property of foreign firms (Centeno 2010). Governmental funding was based mostly on taxes to the foreign commerce and exports sector. In Mexico, economic growth between 1900 and 1930 allowed for increasing federal budgets for public education. In Mexico, President Obregón (1920-1924) created the Secretary of Public Instruction (*Secretaría de Educación Pública*) in 1921 and advanced federal policies that reached areas where local government did not have resources to invest in education. “Cultural missions” (*Misiones Culturales*) were conducted all over the Mexican territory, which involved creating new schools and teaching communities how to read and write, but also how to perform public hygiene practices such as heating water, washing hands, building bathrooms, etc. Rural schools with agricultural orientation were created during the 1920s. The expansion of primary school created the basis for the creation of the cycle of secondary education in 1925. These federal policies of the 1920s centralized the systematized education under the authority of the Secretary of Public Instruction and have been described as the actual beginning of mass schooling in Mexico, because of its focus on the poor and those in rural areas (Ornelas 1998). Growth in school

enrollment surpassed population growth in the first half of the 20th century, and it was associated with country urbanization levels and income per capita (Newland 1994). By 1950, the percentage of the population aged 15 or above with at least some primary education was 64% for Latin America as a region, 65% in Mexico and 80% in Chile (Barro and Lee 2013).

Regarding school sector differentiation, after independence all Latin American countries had their own national version of the general conflict between liberals (*liberales*) and conservatives (*conservadores*). The former group advocated for the separation of State and Church and secular public values, while the latter group promoted the preservation of clerical influence on the newly established nations. This conflict had different resolutions within countries of the region – setting an important precedent for later organizational and stratification trends. A few countries, most notably Mexico and Argentina, established strict prohibition of any particularistic religious education that went against secular curriculum centrally driven and controlled by the state through its public schools. A rather extreme example can be found in Mexico's infamous "*Guerra Cristera*" (1924-1929), a war between the Mexican Revolutionary Party and the Catholic Church, which involved closing orders for Catholic churches and schools all over the country, and eventually ended with the government officials negotiating with the Catholic hierarchy after the people rebelled in defense of their churches. Still, despite official prohibition, private and religious schools existed, were tolerated by the Mexican government, and experienced expansion during the 1940s (Newland 1994). In other cases, such as Brazil, Ecuador and Chile, the State was supportive of Catholic and private educational projects and allowed not only their existence but introduced public subsidies to support them. In Chile, a system of financial support for private schools based on the size and location (urban or rural) of the school (Labarca 1939) was cemented in the first half of the 20th century. However, both Catholic and anti-clerical actors saw education as a civilizing project, and this commonality allowed for complementarity between the two. This is the origin of the mixed system of public and private

education found in most countries in Latin America, which extends to the present day. Indeed, the hostility against Catholic schooling declined during the second part of the 20th century. In Argentina, during the 1950s, after decades of efforts by religious leaders, private universities gained permission to open. By 1950, private schools held close to 12% share of all primary school students in Latin American countries; in Chile the private share was 30%.

In addition to Catholic schools, historically, secular schools have also been a component of the private school sector in Latin America. For example, an important segment of the private school sector was schools run by communities of immigrants, whose schools often targeted urban elites by offering a diverse curriculum that included foreign languages, especially English and French. Other kinds of secular private schools were those funded through philanthropic contributions, often targeting poor children (Newland 1991).

Import Substitution Industrialization period (1950s-1970s)

The period going from the end of World War II until the end of the 1970s has been called the “golden age of Latin American development” (Wood and Roberts 2005), because of the rapid processes of industrialization and urbanization seen in most countries of the region. Between 1950- and 1973, the region’s gross domestic product (GDP) grew at an average annually compounded rate of 5.2 percent, and proportion of the labor force working in industry reached an regional average of 30% , its historical highest (Ffrench-Davis, Muñoz, and Palma 1994). The import substitution industrialization (ISI) strategy was commonly adopted across the region. ISI was originally formulated and promoted by the United Nations Regional Economic Commission for Latin America and the Caribbean (ECLAC) as an economic and development policy that sought to overcome the region’s dependency on primary product exportation. ISI policies included tariffs to protect domestic industries and an active, direct State role in promoting

industrial development. The modernizing role of the State also included investment in infrastructure and in national school-systems. The Latin American version of modernization theory, associated with the Argentinean sociologist Gino Germani (1971, 1981), placed a large importance on education as a catalyst of social change in the transition from the “traditional” society organized around kinship ties and inherited status to the “modern” society of individual achievement and industrialization. However, the capital and technology needed to produce industrialization continued to be controlled mostly by foreign investors and multinational firms; technological change and increased public spending was funded through external debt, which rose dramatically and became unsustainable when interest rates rose and a world recession ensued in the early 1980s. Dependency theory argued that economic dependency from the centers of the First World was the main cause of Latin American underdevelopment (Cardoso and Faletto 1996; Dos Santos 1970). The inherent inefficiencies of an overprotected industrial sector, plus recurrent regional issues including ‘clientelistic’ recruitment in local firms and state agencies and political instability leading to authoritarian governments were additional factors leading to the economic collapse that would close this period.

In Mexico, the 1950s and 1960s are known as the “Mexican Miracle” period. This period coincided with the political consolidation of the Institutional Revolutionary Party (or *PRI*, for its Spanish name), the “party-state” or “constitutional dictatorship” installed that controlled the Mexican government for about seven decades through an extensive corporatist apparatus. The Mexican Miracle provided for the first time a real base of resources to expand the educational system. The proportion spent in education out of the total federal budget increased from 0.97% in 1958 to 3% in 1976 (Tuirán and Quintanilla 2012). In previous decades, the large size and wide dispersion of the Mexican population had provided stringent barriers to carrying out a real large-scale implementation of the strong discursive commitment of the Revolutionary leaders to public education. Early in the period, by 1950 the great majority of the Mexican adult population had

either no schooling (46%) or only primary schooling (48%), while secondary and tertiary education were restricted to a minority (5% and 1% respectively) (Barro and Lee 2013). A major policy during the period was the “11 year plan”, implemented between 1959 and 1970, which included curricular reforms to primary and secondary school plans and teacher education programs, the construction of thousands of new primary schools, improvements in existing ones, investments in textbooks and instructional materials (e.g. creation of the *Comisión Nacional de Libros de Textos Gratuitos* in 1959), among other initiatives (Tuirán and Quintanilla 2012; Latapí Sarre 1998). In many regions and schools, in order to increase coverage or access, schools operated in two ‘*jornadas*’ (morning and evening), which meant that more students overall could attend, but less class hours were available for each student. Reforms during this period were more successful among the middle class and in urban areas, and because of this, inequality increased and a growing, unsatisfied demand for higher levels of education burgeoned (Ornelas 1998). The Mexican Miracle ended politically with the ‘killing of Tlatelolco’ that targeted the large 1968 demonstration of university students that expressed the discomfort of the Mexican middle classes with the PRI regime, and economically with the ‘Tragic Dozen’ (1970-1982), a period of political and economic instability that anticipated the economic crisis of the 1980s (Centeno 2010).

Chile is a partial exception in the region in the sense that the ISI period was shorter, if economically and politically intense, and ended suddenly and dramatically in 1973 with a military coup that opened a 17-year dictatorship period (1973-1990). In the decades prior to 1973, Chile was a prominent example of the State-led import substitution industrialization strategy, which had been developed originally in Chilean capital of Santiago at ECLAC (Economic Commission for Latin America and the Caribbean)’s headquarters. The economic policies of a diverse array of center-right (Alessandri), center-left (Frei’s *Revolucion en Libertad*) and left (Allende’s *Unidad Popular*) political coalitions conformed to the regional ISI pattern. In education, during the 1960s the so-called “equalization reform” established a mandate to guarantee universal access to

primary and secondary education. By 1965, Chile had reached the point of universal primary education, with more than 95% of the 15-19 age group had (at least) entered primary school (Barro and Lee 2013). Despite this social progress, Chile's economic outcomes during this period were much less successful than in other countries of the region, with low economic growth and persistently high inflation. Reasons for the failure of ISI policies in Chile that are mentioned in the literature include the small size of Chile's internal market and the state's inability to mediate social conflict and "hyperideologization" generated by the clash between a governmental program that included the nationalization of private assets like land or mining resources and the organized reaction (supported by the United States government) of local groups who saw their interest affected by these reforms (Fourcade-Gourinchas and Babb 2002; Silva 1991; Oppenheim 1993; Stallings and Brock 1993).

Debt Crisis and Structural Adjustment period (1980s and 1990s)

Latin American economies declined to a point of collapse with the external debt crisis in 1980s. Unable to pay their mounting debts, Latin American countries implemented programs of economic stabilization and adjustment (Reimers 1991; Fourcade-Gourinchas and Babb 2002; Torche 2010b; Carnoy 1995). The landmark event that started this period was the Mexican moratorium of 1982, when the Mexican government announced that it would be unable to pay its debt. Other economies of the region followed. Under pressure from international lending organizations, Latin American economies adopted a "shock therapy" adjustment policy that included currency devaluations, public spending cuts, elimination of price controls, trade liberalization, market deregulation and privatization of public services and enterprises. Throughout the 1980s, Latin American economies presented zero or negative growth, and the period came to be known as the "Lost Decade" (Binder 1999). This economic context had strong

consequences on public spending on education and on student enrollment. In Mexico, federal spending in education declined in real terms by about 44% between 1982 and 1988, and only by 1992 did spending levels return to pre-crisis levels (Tuirán and Quintanilla 2012).

In Chile, in the early 1980s, in the context of a larger free-market economic transformation conducted under the dictatorship of General Augusto Pinochet (1973-1989), Chile's school system was redesigned under the terms of what has been called the "privatization reform" (Torche 2005). This reform had two basic components. First, the administration of public schools was decentralized into the hands of the local municipalities. Second, the mechanism of allocation of governmental funding to primary and secondary education changed with the introduction of a universal (non-targeted), nationwide voucher system that allowed all families to choose between three different types of schools: public schools, private-voucher and private non-voucher schools. The specific design of the voucher scheme followed Milton Friedman's original voucher proposal closely (Friedman 1997, 1955), including universal availability (i.e. vouchers were not targeted to disadvantaged groups or students in underperforming schools, but to any interested family), low legal requirements (e.g. private schools were allowed to select students on the basis of academic performance, religion or other values defined in their educational project) and strong financial incentives (e.g. private schools were allowed to be for-profit and, starting in 1993, to charge extra fees in addition to the voucher) (Brunner 2005; Raczynski and Muñoz-Stuardo 2007; Cox 2003; Bellei 2008). Real government expenditures on education in Chile fell by 37% between 1970 and 1990 (Raczynski and Romaguera 1995).

Democratic Growth: 1990s and 2000s

In Mexico, the 1990s were an unstable period where years of growth alternated with economic reversal, most notably in the 1994 "monetary crisis" that resulted after the abolition of

the policies of tight currency control (peso-dollar parity). The administrations of Presidents Salinas (1988-1994) and Zedillo (1994-2000) deepened the privatization agenda and neoliberal orientation of public policies in Mexico (Portes 2006; Fourcade-Gourinchas and Babb 2002). In education, a profound decentralization reform was implemented in 1992, transferring back the administration of all primary and secondary schools from the federal level to the states. Other Latin American countries like Colombia, Argentina, and Chile a decade earlier also implemented similar decentralization reforms (Hanson 1995; Prawda 1993; Parry 1997). In Mexico, this period brought constitutional changes with a new bill approved in 1993 (*Ley General de Educación*) that made lower secondary schooling compulsory and eliminated many of the anticlerical clauses existing since the prior Mexican Constitution of 1917 and established enhanced rights for private institutions and religious orders to offer education services (Tuirán and Quintanilla 2012; Martin and Solorzano 2003; Brambila 2008). On the other hand, a variety of social and educational programs were implemented during the 1990s. *Progresá*, a poverty assistance program that offered cash payments to poor families conditional on regular school attendance and health practices, was created in 1997, and then it grew into *Oportunidades* in 2002. Also “compensatory school programs” were implemented in the 1990s such as the *Programa para Abatir el Rezago Educativo* or PARE, for students with attendance levels below the expected for their age; the *Programa de Financiamiento Educativo Rural*, for rural education; *PRONASOL*, to support poor families; *Telesecundaria*, to provide distance secondary and high school education; among others. The 2000s brought about the end of the PRI rule and democratic political alternation with the victory of Fox (2000-2006) and Calderon (2006-2012), both from the right-wing PAN. During Calderon’s administration, high school (*preparatoria*) was declared compulsory.

In Chile, the 1990s and 2000s were characterized politically by the return to democracy and steady economic growth. Democratic governments continued the basic institutional structures of the school system as designed in the privatization reform of the 1980s, but attempted to

improve its quality and equity through an agenda of reforms that included increasing the resources for both public and private schools, general and targeted programs of school improvement, better base conditions and incentives for teachers, and extension of the school day, among others (Raczynski and Muñoz-Stuardo 2007).

Throughout the 1990s and 2000s, education opportunities continued to expand in Chile through increases in enrollment at the secondary and tertiary levels, at the same time as privatization and socioeconomic segregation of the school system increased. This, combined with the expansion and privatization of schools created the context and enabling conditions for the emergence of a massive student movement in 2011 that demanded a more active role of the State in the regulation and provision of education (Salinas and Fraser 2012).

Chile and Mexico: National Indicators, 2011

Table 3-1 shows basic national indicators for Chile, Mexico and, for comparison, the United States for the year 2011. Mexico is the second largest country in Latin America, with a population of almost 120 million people, a little more than a third that of the United States. Chile by comparison is a small country of 17 million people. Chile and Mexico are ‘upper-middle income’ countries according to the World Bank classification, and the only OECD members in Latin America, which is a clear sign of their high level of integration in the international policy community. The GDP per capita is significantly higher in Chile than in Mexico, with a difference of almost US\$5,000 in 2011. This difference is a rather recent phenomenon, as shown in Figure 3-1. Only in the 2000s did Chile outperform Mexico in terms of GDP per capita; during the four previous decades, which cover most of the period considered by my empirical analysis, both countries shared a very similar macroeconomic profile. Chile and Mexico are also very similar in their extremely high levels of income inequality, even higher than in the United States, as shown

by values in the GINI index. In terms of its rural population, Mexico can be placed within the Latin American region in the same intermediate group of South American countries like Bolivia, Ecuador, Colombia and Peru, which have more than 20% of rural population, but less than 40%, as is the case in Central American countries like Guatemala, Honduras and Nicaragua. Mexico's population is widely dispersed across its large territory. Chile instead is among the most urban countries in the region, with only 11% of its population living in rural areas; a few urban areas concentrate most of Chile's population.

Table 3-1. National Indicators: Chile, Mexico and United States, 2011.

	Chile	Mexico	United States
Population, total	17,308,449	119,361,233	311,587,816
GDP per capita (current US\$)	14,513	9,717	49,854
Rural population (% of total population)	11	22	18
GINI index ¹	51,8	48.3	45
School enrolment, primary (% net)	93	98	92
School enrolment, secondary (% net)	85	67	87
School enrolment, tertiary (% gross)	71	28	95
Private enrolment: Primary (%)	59	8	9
Private enrolment: Secondary (%)	59	13	8

Source: World Bank. Notes: 1) Gini index measures deviation from a perfectly equal income distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. Year of Gini index for Chile is from 2006, for Mexico is from 2008, and for the United States is from 2007.

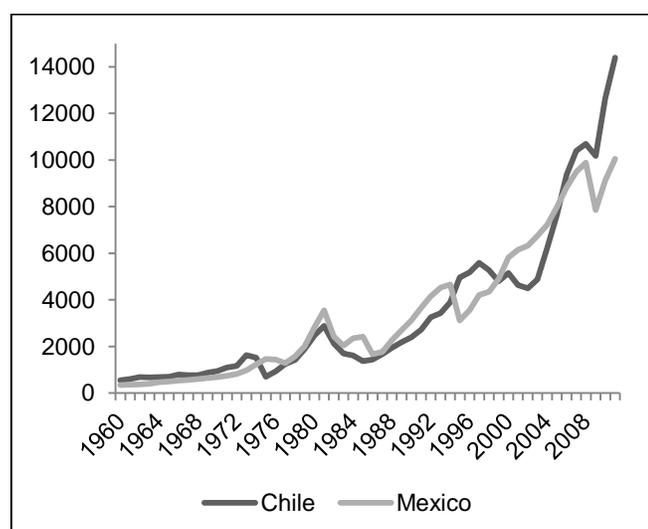


Figure 3-1. GDP per capita (current US\$): Chile and Mexico, 1960-2011.

Source: World Bank.

Table 3-1 also offers basic information on educational expansion and privatization. At the primary level, Chile and Mexico have currently reached almost universal levels of school enrollment. Chile reached universal primary already in the 1960s, whereas in Mexico universal primary happened only recently, during the 1990s. These differences in the timing of school expansion manifest themselves clearly at the secondary and tertiary levels, where enrolment rates vary widely between Chile and Mexico. At the secondary level, Chile currently shows rates of enrolment of about 85%, close to universal, as in the United States. At the tertiary level the difference is even larger, as in Chile tertiary enrollment surpassed 70% in 2011, whereas in Mexico it was only 28%. Regarding privatization, Chile has one of the highest levels of private school enrollment in the world, with almost 60% of students attending private schools in primary and secondary levels. As I explain below, the largest part of that private school enrollment is currently in the “private-voucher” schools, a form of private school that is partially or totally funded through government subsidies per student (“vouchers”), created after the neoliberal reforms of the 1980s. Mexico has levels of school privatization similar to the United States, with 8% at the primary level and 13% at the secondary level.

Figure 3-2 details trends in private school enrollment for the last four decades in Chile. Private enrollment has increased steadily at all educational levels since the privatization reform of 1980s, after a slight decline in the 1970s.

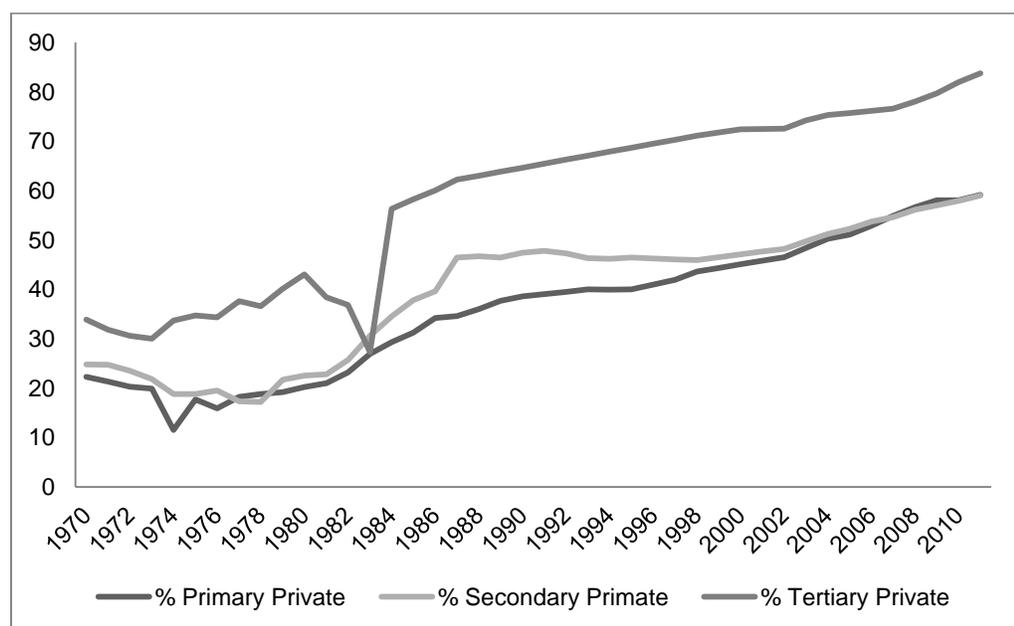


Figure 3-2. Percentage of Students Enrolled in Private Schools by Level and Type of Education, Chile 1970-2010.

Source: Braun-Llona et al. (1998) and UNESCO.

A lower level of privatization is found in Mexico. Figure 3-3 shows trends in the percentages of students enrolled in private schools for each educational level during the last 4 decades, according to the official data of the Mexican Secretary of Public Education. The figure shows three distinctive trends. In primary education, there is almost no change in the private school enrollment share for the overall period, varying at each point between 5 and 8%. In the case of lower secondary and high school, there is a clear decrease in private school enrollment for the overall period, and a steeper fall during the 1980s, which might be related to the economic recession. Finally, a third and opposite trend is found in higher education, where the private sector share has persistently expanded during the whole period, exceeding 30% during the 2000s. These differences in dynamics across levels suggest that the socioeconomic stratification of access to private schooling might vary by level, which is a key part of my analysis.

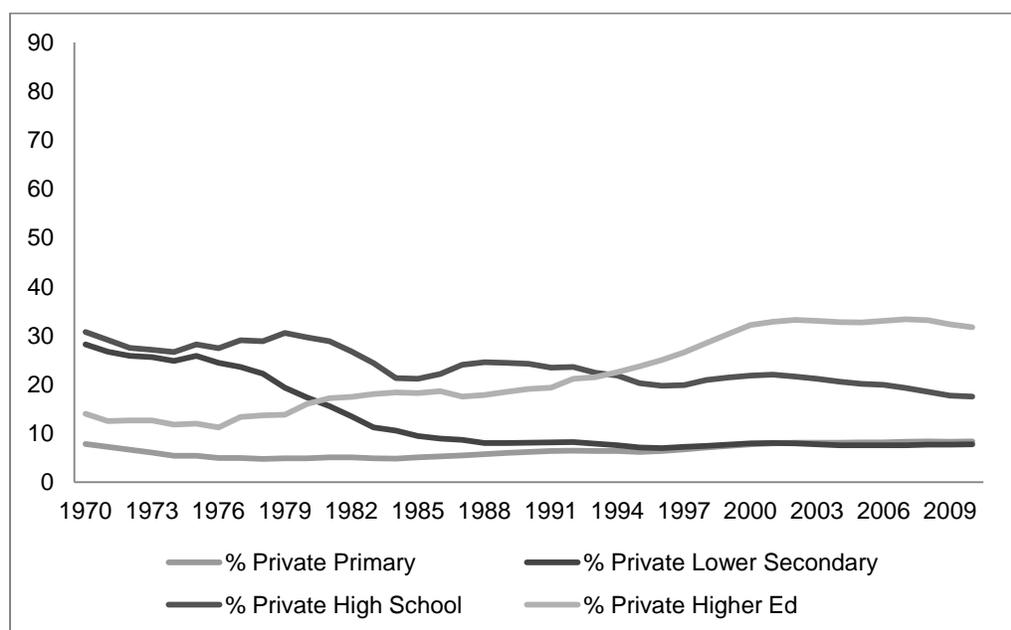


Figure 3-3. Percentage of Students Enrolled in Private Schools by Level and Type of Education in Mexico, 1970-2010.

Source: Secretary of Public Education, Mexico.

Stratification research in Chile and Mexico

Educational stratification: vertical and horizontal dimensions

Most studies on educational stratification in Mexico and Chile focus on its vertical dimension, that is, in the unequal distribution of access or amount of schooling across social groups. Empirical strategies to the study of the vertical inequalities in education include measuring cross-sectional differences in school enrollment (Reimers 2000), intergenerational association between years of schooling of parents and children (Binder and Woodruff 2002; Behrman, Duryea, and Szekely 1999; Torche 2010a), and studies using the educational transitions approach measuring socioeconomic differences in the probability of completing particular conditional school transitions (Torche 2010b; Marteleto et al. 2012). These studies show that

socioeconomic differences in educational access are substantial; as a result of expansion they have declined at the primary level and in some countries at the entrance of secondary level, but for the most part persist or in some cases have increase at the completion of secondary and entrance into tertiary education levels.

Enrollment studies reveal that most Latin American countries approached or reached universal primary enrollment between the 1960s and the 1990s. Some countries like Chile, Uruguay and Argentina reached universal primary by the 1960s. Countries like Mexico and Brazil did not reach universal primary until the 1990s. Differences in the timing of primary expansion have been related to population size and dispersion, levels of urbanization and industrialization, size of the indigenous population, among others (Reimers 2000).

Universalization of access to and completion of secondary education remains a strong political challenge even today, especially for countries with large rural and indigenous populations, like Mexico, Peru, Bolivia or Guatemala. Access to higher education has been a very recent phenomenon in most Latin American countries. Only a few countries, including Chile, Argentina and Uruguay grant tertiary education to about half (50%) of each cohort, whereas in Mexico and Brazil the gross enrollment rate in tertiary education is currently of about a quarter of the age cohort (25%) (UNESCO 2014). Studies that look at the bivariate correlation of schooling between parents and children find that educational mobility is substantially lower among Latin American countries than in the United States (Behrman, Gaviria, and Székely 2001).

Studies for Chile and Mexico consistently show that socioeconomic inequality in the completion of primary school decreased systematically over time as a result of the universalization of primary education during the last decades (Marteleto et al. 2012; Torche 2010b; Binder and Woodruff 2002; Torche 2005a). Equalization in the entry to secondary school was less pronounced, but still noticeable in Chile by the 1980s, and it intensified during the 2000s (Torche 2010b). However, the completion of secondary and the access to tertiary education

remained persistently unequal for most of the 20th century in Chile and Mexico. Furthermore, studies of Mexico find that inequalities for secondary completion and entrance into tertiary levels *substantially increased* for Mexican cohorts that attended school during the 1980s, when the economic crisis resulted in an “income effect”, that is, students from lower social strata dropped out of school and joined the labor market as a way to generate supplementary sources of family income (Torche 2010b; Post 2002). Only in the 1990s and especially in the 2000s did studies report a clear equalization trend in secondary education in Mexico, as a result of the economic growth and education expansion of this period (Marteleto et al. 2012).

Regarding horizontal stratification, educational researcher in Latin America have often assumed as obvious that schools sector involves a key socioeconomic device, but offered little evidence. For example, Torres and Thompson (2000) write, bluntly, that “schooling in Latin America is segregated by class, with the poor attending public schools and middle and upper classes attending private schools (except in the case of higher education which is often the opposite)” (p510). Similarly, Martin and Solorzano (2003) write that in Mexico “the elite, and increasing sections of the middle class, are routinely opting for private schools and universities” (p15). Beyond these kinds of broad generalizations, actual empirical analyses are harder to find. In the case of Mexico, only a handful of descriptive analyses of the K-12 private school sector exist (Septién 1984; Muñoz Izquierdo 1981). Chile is an exception, as I review more extensively below, because the privatization reform of the 1980s produced a large literature analyzing the effects of school vouchers on the quality and equity of Chilean education. There is, however, one important recent study that has analyzed historical trends in school sector stratification in Latin America using an educational transitions approach. Marteleto et al (2012) used household data for Brazil, Chile, Mexico and Uruguay and measured school sector stratification as the effects of mothers’ education on the probability of private school enrollment at the secondary level during the 1980s, 1990s and 2000s. Using a logistic regression approach, they found that the association

between social origins and private school enrollment increased over time for all countries with the exception of Mexico, where the effects of origins remained constant through the whole period. In the case of Chile, the effects of origins on private enrollment in secondary school increased dramatically between the 1980s and the 2000s. These findings confirmed the findings of a previous study in Chile, where Torche (2005a) reported that differences in the probability of graduating from high school (given high school entrance) between students attending public private-voucher schools increased significantly during and after the voucher reform. In her study of Chilean educational and social mobility, Torche (Torche 2005b) called for new research on “parental investment in quality and not only quantity of education to further understand the mechanisms of intergenerational reproduction in Chile” (p191). In the methodological section I describe how my dissertation research builds upon and extends this emerging literature on school sector stratification in Latin America.

The literature on private and public schools in Chile is large, yet for the most part it covers only the period going from 1980 to the present, as its main focus is the characteristics and effects of the voucher reform. The first and most obvious outcome of the voucher reform was the strong privatization of school enrollments. While in 1981 78% of Chilean students were in public schools and 15% in private-subsidized schools, by 2009 private-subsidized schools had already captured 51% of the enrollment share, while public schooling dropped to enroll only 42% of Chilean students (Marcel and Raczynski 2009). Not every universal voucher plan has produced such massive transfer of students from public schools to the private school sector. Carnoy (1998) analyzed this issue comparing national voucher plans in Chile and Sweden, a country where public school enrollment remained at more than 90% after three decades of nationwide school choice, and concluded that the historical prestige of the public sector in Sweden prevented a privatization process of the magnitude observable in Chile, where, on the contrary, “private schooling was regarded as better than public before the reform” (p335).

A number of studies have investigated why families are leaving the public sector. Survey-based studies found that most Chilean parents consider few alternatives in their choice-set, have weak specific knowledge of their children's academic performance and choose schools more for 'practical reasons', such as proximity to the home or cost of the tuition than for their 'quality' (Elacqua and Fabrega 2006). A study of "revealed preferences" analyzing the choice-set of schools parents considered suggests that families may be considering the social class of the student body as a strong non-declared factor for choosing schools (Schneider, Elacqua, and Buckley 2006). Others have emphasized that both distance and 'quality' define parental demand, as they find that families are willing to travel farther distances to schools with higher test scores (Chumacero, Gómez, and Paredes 2011; Gallego 2002). Research using qualitative methods (i.e. interviews and focus groups with families and students) found that Chilean families' working-concepts of a "good" and "bad" school include not only educational components (e.g. teachers) but also environmental components highly influenced by social class (e.g. worst discipline in schools with poor students) (Raczynski et al. 2010). The perceived low quality of public schools even became one of the main grievances of a recent student movement (Salinas and Fraser 2012).

A second outcome of the reform, facilitated by universal school choice, has been an increasing trend of social class segregation between public and private schools and within school sectors. Two recent studies using PISA 2009 data for 39 countries show that Chile has one of the highest levels of school segregation by socioeconomic status in the world (OECD 2011; Willms 2010). These studies provide an index of "horizontal inclusion", i.e., proportion of socioeconomic variance within schools based on the Duncan dissimilarity index (Allen and Vignoles 2006; Duncan and Duncan 1955), which varies between 0 and 1, where 0.6 is considered 'hypersegregation' (Glaeser and Vidgor 2001); Chile has levels of school segregation that vary between 0.5 and 0.6. Residential segregation, as well as patterns of choice among families, explains Chile's high levels of school segregation (Carnoy 1998; McEwan and Carnoy

2000; Hsieh and Urquiola 2006). School segregation occurs between public and private schools because it is mainly the more educated, middle class parents who now select the private sector, while less educated and low-income parents are more likely to select public schooling for their children (McEwan, Urquiola, and Vegas 2008; Hsieh and Urquiola 2006). On the other hand, within school sector stratification also exists, with each private-voucher school focusing on a socioeconomically homogeneous community (Mizala and Torche 2012). Valenzuela, Bellei and De Los Ríos (Valenzuela, Bellei, and De los Rios 2010) find that private-voucher schools are more segregated than public schools.

Finally, the Chilean case has been the object of extensive research dedicated to comparing the academic performance of public vis-à-vis private school. In a similar fashion as with voucher experiments in the United States (Witte 2009), early generations of studies arrived at disparate conclusions as researchers used different modeling strategies (Mizala and Romaguera 2000; Sapelli and Vial 2002). As new and more complex data has become available allowing the use of techniques that control for more variables and variables at different levels (e.g. multilevel data; control for selection on the supply side), findings converge in showing no significant difference in performance between public and private schools. Bellei (2008) replicated previous analyses, explaining how differences in data and models used by researchers produced differences not just in the size but also in the direction of the effects. His analysis included a more complex treatment of biases not controlled by previous works, finding there are no significant differences between public and private schools. Beyond the Chilean case, a study finds that private schools do not outperform public schools all over Latin America, once proper family background and school levels controls are introduced (Somers, McEwan, and Willms 2004).

An “asymmetrical” social structure and the new middle classes

Chile and Mexico had early studies of status attainment and social mobility in the 1970s (Raczynski 1972). Those studies capture a different society, previous to the changes brought by structural adjustment and democratic transitions. Here I focus on more recent studies that have investigated contemporary trends in social inequality and social mobility in Latin America, and in Chile and Mexico, in particular. These studies have used different approaches, including measures of occupation (Torche 2005b, 2009, 2010a; Behrman, Gaviria, and Székely 2001), earnings (Núñez and Miranda 2006), and wealth (Torche and Costa-Ribeiro 2012). Overall, this body of research shows that Latin America as a region, and Chile and Mexico, in particular, are significantly more unequal and socially less fluid than advanced industrial societies. These patterns of high social inequality and rigidity have not changed significantly during the last decades, yet some interesting trends within the general pattern are observable.

Chile and Mexico have high rates of *absolute* social mobility due to the upgrading of the occupational structure (i.e. shrinking of agricultural work, expansion of manual and service jobs). Nevertheless, their level of *relative* mobility or “social fluidity” (mobility net of changes in the occupational structure) is significantly lower than that of advanced industrialized countries. In other words, although a higher proportion of people are working in jobs that require higher skills and better compensation (relative to their parents), the patterns of allocation of individuals into different occupations have not become less dependent of social origins. In particular, studies find that the main barrier to fluidity is in the strong inheritance of status among upper socioeconomic groups—that is, strong hierarchical barriers prevent downward or upward movement between upper groups of executives and professionals on one side, and the middle and lower strata on the other (Torche 2009, 2008, 2005b). This comparative rigidity is linked to an “asymmetrical” structural pattern of extreme income concentration in the top income quintile with a more even

distribution in the remaining quintiles. Although there is significant fluidity between the lower and middle classes, these movements tend to be “inconsequential” because of the difference in resources between these groups is not very large. This pattern of “elite closure” is especially strong in Chile and Mexico, and it is somewhat different from that of the United States. In the US, there are more fluid movements between the upper and middle classes, and comparatively stronger barriers for upward mobility from the low-income strata into the middle class (Torche 2005b). In terms of trends over time, there are some differences between Latin American countries. In Mexico, studies find an increase in social rigidity for younger cohorts as a result of the economic crisis and structural adjustment reforms of the 1980s, particularly a strengthening of the barriers into the higher service class (Torche 2010a). In Chile, social mobility has not changed significantly over time. In Brazil, studies have found an increase in social fluidity for young cohorts as a result of the decline of the occupational returns of education and of the less direct inheritance of wealth and occupation. The mechanisms of elite reproduction in Latin America have not yet been understood, and this dissertation study explores whether private schooling might be a significant one. What is the role of this school sector stratification in the intergenerational mobility process? Available research has not addressed this question.

A recent study compared analyzed trends for the middle class in Chile and Mexico (Hertova, López-Calva, and Ortiz-Juarez 2010). They define the middle class as those households facing a lower probability of falling into poverty and find that the middle class is growing in both countries for the period 1992-2006, but most consistently in Chile. They say that in Chile the middle class is also getting a larger part of the income share, thus diminishing their risk of being poor and strengthening the income of the middle class. This study suggests a clearer differentiation between middle and lower socioeconomic groups in Chile than in Mexico, and also that the Chilean middle class might have gained additional resources to invest in private schooling over time.

Summary

The original introduction of mass schooling in Latin America occurred through processes of institutional diffusion during the early 19th century, when the new national elites that gained power after independence embraced the institutional ideas and economic interests of the new dominant metropolitan nations of the time, particularly European nations like France, Prussia and England, as well as the United States. State commitment to the mass schooling project was evident in early compulsory schooling laws and in the notion of the “Estado Docente”, a definition of the State that linked the possibility of the nation with the responsibility for instructing the illiterate masses in the imperatives of European civilization. Limited state capacity, however, postponed the actual accomplishment of universal primary for the second half of the 20th century, when industrialization processes and international support provided the necessary resources. Inequality in the completion of primary education declined in the decades after World War II in the context of industrialization and educational expansion. However, the economic crisis of the 1980s impacted students from lower social strata more heavily (e.g. they were more likely to dropout of high school), and as a result inequality in access and completion of secondary education increased. Recently, research has shown a new equalization trend as a result of economic growth and education expansion in the 2000s (Marteleto et al 2010).

Throughout the 19th and 20th century, three major factors influenced development of the function of private schooling in Latin America: (i) the role of the Catholic Church, which is a legacy of the colonial period, though the political influence of the Church on governmental policy varied within the region after independence, despite the pervasive Catholicism of both the elites and the masses in Latin America; (ii) the longstanding “asymmetrical” social structure and “elite closure” in the region, consisting of extreme wealth and power inequalities between the elites (landlords, large capitalists) and the masses of the population, which motivated and enabled the

upper classes to support, through the payment of tuition fees, separate private schools for their offspring, and (iii) different levels of penetration of neoliberal doctrines into educational policy during and after the structural adjustments periods, which in some countries led to the increase of public subsidies for private schools through universal or targeted vouchers. Private schooling had a stronger role in Chile because of the larger influence of the Catholic Church in State decisions, which led, starting early on, to regulatory and financial incentives for private actors to supply education. Because of the earlier and stronger penetration of free-market policies in education policy during the 1980s and beyond in Chile, the implementation of national school vouchers and the subsequent growth of private school enrollment burgeoned the country's private school sector. Mexico, though a deeply Catholic country, has had a much more strict separation between State and Church in educational matters. Thus, Mexico never provided regulatory or financial subsidies for private or religious schools (religious instruction was formally prohibited but tolerated in practice). Also, Mexico had its own strong experience of structural adjustment and privatization of its economy in the terms of neoliberal policies, yet these were never expanded to the educational field, where the role of the State was firmly established throughout. Extreme economic and power inequalities in both countries is a common feature that might account for strong patterns of social segregation in several dimensions of life (e.g. neighborhoods, schools, social life); one of the effects of this segregation is elite access to private schools. In Table 3-2, I use the basic dimensions of expansion and stratification to highlight the key elements of the process in Latin America.

Table 3-2: Educational Expansion and Stratification in Latin America

		Educational Expansion	
		Institutional Culture	Organizational Structure
Educational Stratification	Vertical Dimension	<ul style="list-style-type: none"> - Schooling as “civilization” and nation building - State commitment to mass schooling: “<i>Estado Docente</i>” 	<ul style="list-style-type: none"> - Limited State-capacity pre-1950 - Socioeconomic inequality: “asymmetrical” social structure - Macroeconomic performance
	Horizontal Dimension	<ul style="list-style-type: none"> - Influence of Catholic Church - Market-oriented reforms in Education 	<ul style="list-style-type: none"> - Public subsidies for private schooling: Catholic, immigrants, philanthropic - 1980s-1990s: school vouchers

Table 3-3 presents a summary of the specific contexts for the period of time considered in the empirical analysis. The 1940s, 50s and 60s were years of economic growth and educational expansion in Chile and Mexico. In Chile, the 1970s brought a military dictatorship and the implementation of a strong program of free-market reforms that included educational decentralization and a school privatization plan through a nationwide universal voucher program. In Mexico, the 1980s and 1990s were period of economic difficulties; structural adjustment economic policies in the 80s included large cuts in the education budget, whereas the 90s decentralization reform and a growing number of education programs targeted on lower socioeconomic groups. Democracy came back to Chile in the early 1990s, when the country started a period of persistent economic growth accompanied by social protection policies including, including school improvement. By 2006 and 2011, massive student movements protested the neoliberal orientation and social class inequalities of the school system.

Table 3-3. Educational, Political and Economic Contexts, 1940-2009: Chile and Mexico

	Chile			Mexico		
	Education	Political	Economic	Education	Political	Economic
1940s						
1950s	School expansion policies	Populist / Progressive Coalitions	ISI*	School expansion policies		“Mexican Miracle”
1960s	Equalization reform			“11 years plan”	Nationalistic PRI	
1970s		Dictatorship (1973-1989)				
1980s	Privatization reform		Free-market reforms	Budget Cuts	Neoliberal PRI	Debt Crisis
1990s	Decentralization	Democracy	“Chilean Miracle”	Decentralization		Monetary Crisis
2000s	School Improvement		Social Protection	Social programs	Government Alternation	Growth
	Student Movement					

Notes. ISI*: Import-Substitution Industrialization strategy

Chapter 4

Research Methodology

Research Questions

This study aims to understand the role of school sector differences in the intergenerational processes of educational and social stratification in Chile and Mexico. I address that research imperative through two separate, yet conceptually interrelated empirical analyses, as represented in Figure 4-1.

Research Question 1 (RQ1), studies the role of school sector in educational stratification in Chile and Mexico and how that role has changed over time for cohorts born in the second half of the 20th century. Specifically, I study the association between socioeconomic origins and what I call *school sector placement transitions* (hereafter, for simplicity, just ‘placement transitions’ or PT). Placement transitions are measures of education attainment that combine the vertical dimension captured by traditional school transitions studies (continues/drops out) with a horizontal dimension of school sector differentiation (public/private school placement) that is of special interest for the Latin American context. In this research I study three placement transitions: PT1 refers to Completing primary school, PT2 refers to Entering High School, and PT3 refers to Completing High School. In each of these PT, there are three possible outcomes: dropping out (value of zero), completing the transition attending a public school (value of one), or completing it in a private school (value of two). Studying placement transitions allows me to analyze at which educational level vertical and horizontal stratification become the greatest, and also whether horizontal stratification at earlier levels conditions outcomes at later stages of the

educational trajectory (what the literature has called “pathway effects”). RQ 1 can be summarized as follows:

- Research Question 1: For Chileans and Mexicans from different birth cohorts, what are the effects of family socioeconomic background on the probability of obtaining particular outcomes (dropping out, choosing to attend public school or private school) at three different ‘placement transitions’ (PT1: completing primary, PT2: entering high school, Pt3: completing high school)? And, to what extent do the outcomes for more advanced placement transitions (PT2 and PT3) vary depending on the school sector attended in primary school?

The second part of the analysis, or Research Question 2 (RQ2), looks at the role of school sector in adult socioeconomic stratification. The focus here is on the mechanisms through which school sector differences affect stratification. First, I consider whether attending a private school at different levels (primary, high school) has a *net direct effect* on occupational destination, after controlling for the traditional predictors used in the basic social stratification model, i.e., years of schooling, father’s occupation and parental education. I also explore a second mechanism, that is, the *interaction effect* between years of schooling and school sector, as the effects of having a larger amount of schooling might differ depending on the type of school attended. In Figure 6, the diagonal arrow going from school sector towards the middle of the line that goes from years of schooling towards SES destination represents these interaction effects between years of schooling and school sector. Finally, although it is not my focus here to make a detailed analysis of variation over time as in RQ1, I conduct an exploratory analysis of how occupational destination varies across individuals who completed PT1, PT2 and PT3 in either the private or the public school sector. In sum, RQ2 goes as follows:

- Research Question 2: For Chilean and Mexican individuals, what are the direct effects of private school placement on adult occupational attainment, net of years of

schooling and family background? What are the interaction effects of years of schooling and private school placement on adult occupational attainment, net of family background? Has the association between school sector placement and adult occupational attainment changed across birth cohort?

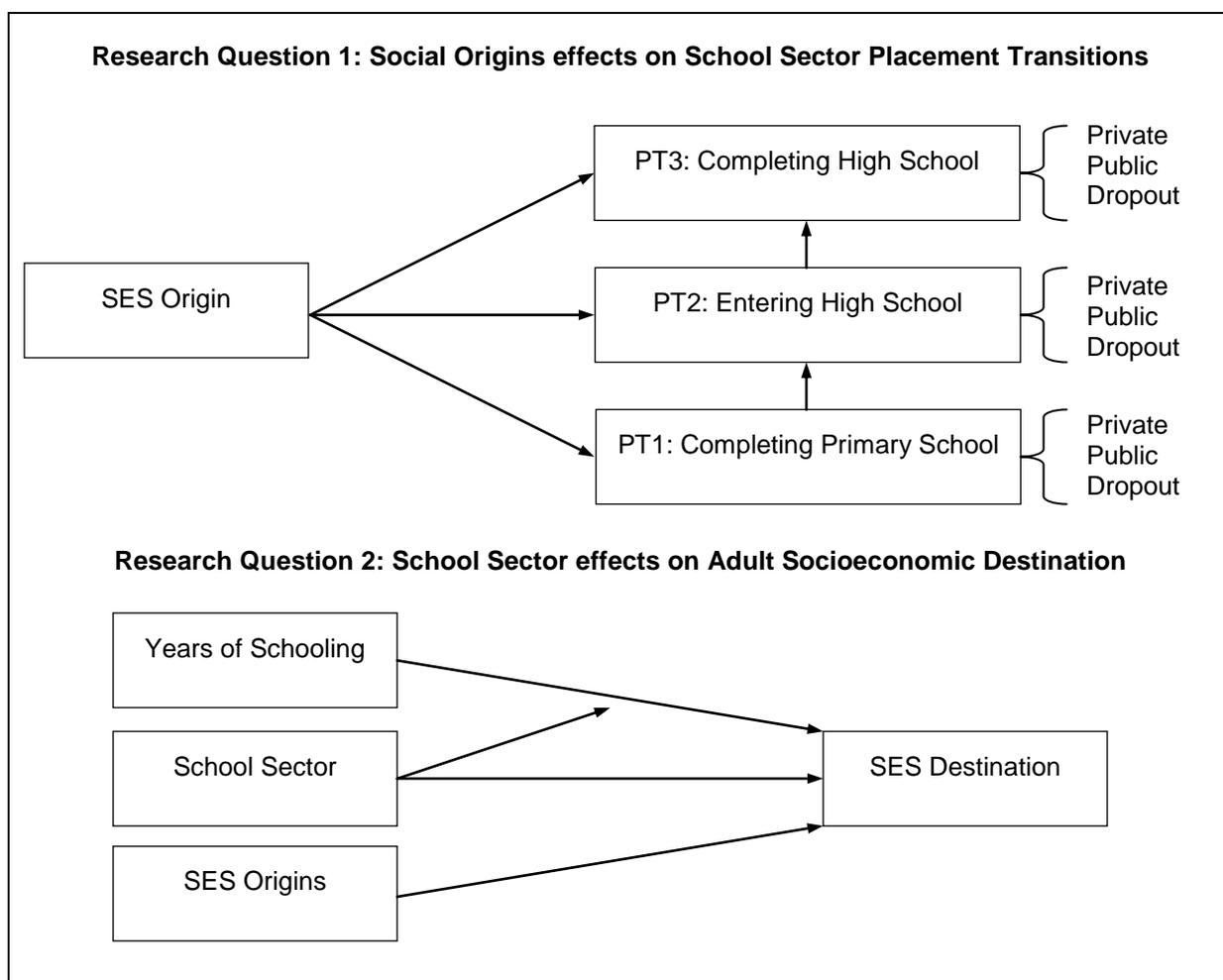


Figure 4-1. Research Design: The Role of School Sector in Intergenerational Social Stratification

I present the results addressing Research Question 1 in Chapter 4, and the results addressing Research Question 2 in Chapter 5. The final Chapter 6 integrates the findings and discusses its importance in light of conceptual framework and implications for future research.

Research Hypothesis

The general hypothesis of this study is that school sector has a significant role in the processes of educational and social stratification among Latin American countries. This hypothesis is born out of previous research on Latin America that provided initial insight on the topic. However, how that role varies by country, educational level or transition, birth cohort and social strata are all open questions that previous research has only partially addressed. I selected Chile and Mexico because they exemplify the regional variability of factors identified as key to the emergence of strong private sectors in Latin America. Chile has a larger private sector as a result of a long historical tradition of governmental support of private and religious schools. This support of private schools by the government intensified during the 1980s, with the introduction of universal school vouchers as a way to fund both public and private schools; Chile also has very high levels of educational expansion, reaching universal primary access in the 1960s and having levels of access to secondary and tertiary education similar to advanced countries. Mexico's school system has a much stronger "public" ethos, and private schools have been tolerated in practice but not supported financially or regulatory; Mexico's level of educational expansion is also more limited than Chile at the lower secondary and high school levels.

Regarding Research Question 1 and trends in educational stratification, the literature review provides us with three basic hypotheses:

The so-called 'EMI hypothesis' (Lucas 2001) predicts that expansion-driven decline in socioeconomic differences in the amount of educational attainment (i.e. vertical equalization) will increase the role of qualitative educational differences (i.e. horizontal stratification). This can also be called the "replacement hypothesis" because horizontal inequalities are thought to *replace* declining vertical inequalities. Therefore, according to this first hypothesis we would expect school sector stratification to be larger in Chile, where expansion has been larger and most

consistent, as opposed to Mexico where not only expansion has been slower but also the effects of the 1980s economic crisis had larger consequences among lower socioeconomic Mexican groups.

A second hypothesis is that socioeconomic stratification is weaker in countries with more governmental funding for private schooling, as suggested by a recent international report (OECD 2012b). The report suggests that the incentive of governmental funding leads private schools to assimilate public schools. Therefore, according to this ‘sector assimilation hypothesis’ we would expect horizontal stratification to be higher in Mexico, where historically there have been no public subsidies for private schools, compared to Chile with its decades-long mixed-provision system added, in the 1980s, to the nationwide universal voucher system.

A third hypothesis, based on historical records, suggests that Latin American elites have historically used private schooling regardless of the levels of educational expansion, as part of the larger patterns of class segregation (e.g. residential, marriage, life-styles). In the case of this ‘elite closure’ hypothesis, similar and historically constant levels of horizontal stratification would be expected in Chile and Mexico, given their similar levels of income inequality. This can also be called the “reinforcement hypothesis” because it predicts that vertical and horizontal inequalities can coexist and reinforce each other at any given time.

Regarding Research Question 2, it is important to note that private school effects on occupational attainment might come from many different sources, and not necessarily from higher instructional or educational “quality”. Other possible factors could stem from peer effects, school culture or environment, social networks to be actualized in the future labor market, signaling effects or other labor market effects (firms might prefer graduates from private schools), etc. (Bills 2003). Thus, the literature provides us with the following hypotheses:

Regarding effects of school sector on occupational destination, if all private schools offered to students were of better instructional or educational quality than public schools, then

private school effects on destination would be entirely channeled through long-term educational attainment; in this “school quality” hypothesis, private school effects are not significant after controlling for years of schooling. Yet if private schools offered advantageous social networks and connections (social capital) and upper class values and dispositions (cultural capital), then significant private school effects would be expected even after controlling for years of schooling. We could call the latter the “elite closure” hypothesis, as private schooling would basically be working as a barrier to prevent downward mobility out of the elite.

Regarding trends over time, the effects of educational expansion on the economic returns of private school attendance is not clear. If the value of widely available credentials decreases as a result of a supply effect (e.g. many primary and secondary public school graduates), then we might expect the returns to a more selective type of education, such as private schooling, to become greater over time. An increase in private school returns might also occur if the job market uses school sector as a signal for social connections or cultural capital with productive or social value. On the contrary, if the labor market selects job candidates on an entirely meritocratic basis, then primary or secondary school sector might not be a relevant factor, and no change over time would be expected.

Data

Data limitations were until recently the major obstacle to further research on intergenerational stratification trends in Latin America (Buchmann and Hannum 2001). To study intergenerational associations in socioeconomic and educational variables, longitudinal surveys that follow both parents and children over long periods of time are the ideal source of data. These kinds of inter-generational longitudinal surveys are not available for any Latin American country. Two alternatives approaches are household surveys and social mobility surveys. Household

surveys collect basic demographic data for all household members, including parents and children. These are periodically collected by governments in most Latin American nations and are the source of relevant recent research (e.g. Marteleto et al. 2012) However, for the purposes of this research project household surveys have two main limitations. Because they capture the second generation (children) when they are still living with their parents, household surveys do not measure children's *long-term* educational attainment (e.g. young individuals who have dropped out when the survey is administered can eventually go back to school after data collection), nor provide information on their adult socioeconomic destination. I therefore use the second alternative approach based on social mobility surveys, which provide instead final educational attainment measures and also data on occupational destination. These are cross-sectional surveys with questionnaires that include retrospective questions on parents' educational and economic status. Chile and Mexico are among the handful of countries in Latin America that have nationally representative recent surveys of this kind.

For Chile, I used the 2001 Chilean Social Mobility Survey (CSMS-2001). This was a collaborative research project conducted by the Department of Sociology of the Pontificia Universidad Católica de Chile and the Center for the Study of Wealth and Inequality at Columbia University. CSMS-2001 is a fully probabilistic, stratified, multistage survey where the final sampling unit is the household and the unit of observation is the male head of household of 24-69 years old. Fieldwork was conducted between April and June of 2001 through face-to-face interviews. The total sample size is 3,520. After exclusion of cases with missing data in the variables of the analysis and individuals outside of the comparable age range 25-64, the usable sample for this study is 2,999.

For Mexico, I used the 2011 Mexican Social Mobility Survey (EMOVI-2011), carried out by the Centro de Estudios Espinoza Yglesias (CEEY). EMOVI-2011 is a nationally representative, fully probabilistic, stratified multistage survey applied in 2011 to a sample

Mexican men and women between 25 and 64 years old. Sampling stages included municipalities (*municipios*), basic geo-statistical areas (*areas geoestadísticas básicas* or AGEB) defined by the National Institute of Statistics and Geography of Mexico, blocks (*manzanas*) within AGEBs, and households (*vivienda*). Fieldwork was conducted between May and June of 2011 through face-to-face interviews. The total sample size is 11,001. I restricted the analysis to males because Chilean data did not sample females. After excluding females and cases with missing data on the variables considered in the analysis the usable sample is 4,667.

Variables

The variables in the study are grouped into four dimensions: respondents' Education (E), respondents' socioeconomic Origins (O), respondents' socioeconomic Destination (D), and Covariates (C).

Three different measures of respondent's education are included in the analysis: Years of schooling completed, School Sector Placement, and School Sector Placement Transitions.

Note that there are a number of organizational differences between the Chilean and Mexican school systems that are reflected in the operationalization of these education measures. In Mexico, the school system is vertically structured in three cycles: primary education (*primaria*) goes from grade 1 to grade 6, lower-secondary education (*secundaria*) from grade 7 to grade 9, and upper-secondary or high school (*preparatoria*) goes from grade 10 to grade 12. There is also a substantial differentiation of school types within the public sector in Mexico, including academic and vocational (*capacitación para el trabajo*) schools in lower secondary, and academic (*bachillerato general*), technological (*bachillerato tecnológico*), and professional (*profesional técnico*) high schools. Also, the teaching school and degree (*escuela normal*) was upgraded in 1984, so that it went from requiring only primary school completion in order to

secure a degree and being equivalent to high school, to being a university level degree. Because the focus of my research is on the differences between sectors, I do not consider this differentiation of school types within the Mexican public school sector in my analysis. In Chile, the school system currently includes only two vertical cycles: primary education (*enseñanza básica*) goes from grade 1 to 8, high school (*enseñanza media*) from grade 9 to 12. This curricular structure has been in place since the so-called “equalization reform” of 1965. In the Chilean school system that existed before 1965, the length of the cycles was different: primary education (then called *humanidades*) went from grades 1 to 6 and high school (then called *preparatoria*) from 6 to 12. CMSM 2001 data distinguishes whether each respondent attended the new or the old school system, and therefore each observation in the sample was coded consistently. For example, if an individual in the Chilean sample attended the new school system, I coded him as completing primary education after 6 years of schooling, whereas if he attended the old system I coded him as completing primary education only after 8 years of schooling. In Chile, there is a single curricular track differentiation at the high school level, between academic (*científico-humanista*) and vocational (*técnico-profesional*) high schools; academic and vocational tracks are offered by the public and private sector. Because my focus is on school sector, I do not consider vocational tracking in my analysis. Considering the above, the education variables included in the analysis are the following:

Years of schooling completed is a continuous variable that ranges from values of 0 years (no schooling) to 17 years of schooling. All individuals with high school completed were coded 12. At the postsecondary level, subjects with graduate education (complete or incomplete) were coded 17, subjects with college education and four or more years were coded 16, subjects with vocational or technical postsecondary education were 14 if they completed their degree and 13 if they did not complete it.

School Sector Placement is a set of dummy variables referring to whether a respondent attended a public school, a private school, or a private-subsidized school (only Chile) at the primary, lower secondary (only Mexico) or high school level. As I use it in this study, private schools are private schools that receive no governmental funds and are financed completely through tuition fees or other non-governmental contributions (e.g. churches, business, etc). Private-subsidized schools are private schools whose funding comes either entirely or in part from governmental sources. Private-subsidized schools do not exist in Mexico and, consistently, the school sector question in EMOVI-2011 distinguishes only two sectors: public and private schools. In Chile, public-subsidized have a long history and became prominent during the “privatization reform” of the 1980s, after which this sector is composed entirely by private schools receiving vouchers. Consistent with the structure of the Chilean educational system, the school sector question in CSMS-2001 distinguishes between three sectors: public, private, and private-subsidized.

School Sector Placement Transitions is a set of three educational transitions with multiple nominal outcomes. The educational transitions considered in the study are the following: Placement Transition 1, completing primary education; Placement Transition 2, entering high school (in Chile) or completing lower secondary (in Mexico), conditional on completing primary; Placement Transition 3, completing high school, conditional on completing the previous transition. In Chile, in each transition students face four possible outcomes: not completing the transition (dropping out), completing the transition in a public school, completing the transition in a private independent school, or completing the transition in a private subsidized school. In Mexico, placement transitions outcomes include three possible outcomes: dropping out, public school and private school. I do not consider the transition into post-secondary education because the Chilean data does not include information on school sector after the high school level.

Respondent's socioeconomic destination is defined as *Occupational Status Attainment* and measured using the International Socio-Economic Index of Occupational Status (ISEI). The Chilean and the Mexican surveys ask respondents about their current work, and then code the responses following the International Standard Classification of Occupations 1988, a.k.a. ISCO-88 (ILO 1990). Transformation of ISCO-88 codes into the ISEI scale was conducted using the "iskoisei" Stata program based on Ganzeboom, de Graaf, Treiman (1992). This variable is used only in models addressing Research Question 2, where it is the outcome variable. I standardized ISEI scores to have a mean of zero and standard deviation of 1 to have a common scale to compare and interpret the effect of the predictors in terms of relative occupational positions within each country.

Respondent's *Socioeconomic Origins* is measured using two variables: Father's Occupational Status, and Parental Education.

Father's occupational status is measured through the ISEI scale. The transformation from survey data to ISCO-88 to the ISEI scale followed the same procedure as in the respondent's occupational destination. Mother's occupational status was not considered in the analysis for two reasons: data on mother's occupation is not available in the Chilean survey, and in the Mexican survey the question was included in the questionnaire but missing data was very high due to the limited labor market participation of women in older generations.

Parental education is measured as the number of years of schooling completed by the parent with the highest education. Chilean and Mexican surveys included separate questions about the education of the father and the education of the mother. For cases where data on father's or mother's education was missing, data on the other parent was used.

Finally, *Birth Cohorts* are included in the analysis as *Covariates*. Birth cohorts are a set of dummy variables distinguishing the period of birth of each individual in the sample. Four birth cohorts were considered for both Chile and Mexico. As summarized in Table 4-1, due to

differences in the year of data collection (2001 in Chile, 2011 in Mexico), only three of these cohorts are shared between both countries (Cohort 1: 1947-56, Cohort 2: 1957-66, Cohort 3: 1967-76), and each country has one cohort not covered by the other (Chile includes Cohort 0: 1937-46, Mexico includes Cohort 4: 1977-86).

Table 4-1. Birth Cohorts by Year of Birth, School Trajectory and Respondent's Age when data collection: Chile and Mexico

	Year of Birth	School Trajectory		Respondent's Age	
		Enters Primary	Completes High school	Chile	Mexico
Cohort 0 (only Chile)	1937-46	1943-52	1954-63	55-64	No data
Cohort 1	1947-56	1953-62	1964-73	45-54	55-64
Cohort 2	1957-66	1963-72	1974-83	35-44	45-54
Cohort 3	1967-76	1973-82	1984-93	25-34	35-44
Cohort 4 (only Mexico)	1977-86	1983-92	1994-2003	No data	25-34

Birth cohorts are a relevant covariate for the analysis because each cohort member of a particular cohort is similarly exposed to a number of relevant social contexts that vary over time and that can affect individual's educational trajectories. In Chile, Cohort 0 (1937-46) and Cohort 1 (1947-56) were born, entered primary school and graduated from high school during the Import-Substitution Industrialization (ISI) period, which included the so-called "equalization reform" during the mid-1960s, that established a mandate to guarantee universal access to primary and secondary education. Members of Cohort 2 (1957-66) also were born and entered primary school during the ISI period, but instead entered and graduated from secondary education in the context of the military dictatorship that implemented the neoliberal reform to the economic (i.e. deregulation, privatization) and educational (i.e. universal school vouchers, decentralization of public school administration) system in the mid-late 1970s and 1980s. Finally, most members of Cohort 3 (1967-76) entered both primary and secondary school during the military dictatorship, as the privatization effects of the neoliberal reform were starting to consolidate in the Chilean school system. The younger members of Cohort 3 graduated from high school in the context of the return of democracy.

In Mexico, members of Cohort 1 and Cohort 2 were born and attended primary and high school during the period of sustained industrialization known as the “Mexican Miracle”. Governments slowly expanded schooling during this period to policies such as the “11 year plan” (1959-1970). Members of Cohort 3 and 4 completed their school trajectory in the context of economic crisis known as the “Lost Decade” that lasted throughout the 1980s, which led to heavy cuts in education funding, or during the economically unstable 1990s, which presented some growth in the first half of the decade, and the severe “Monetary crisis” in the second half of the decade. Only a few members of Cohort 4 benefited from the more stable economic and political context of the early 2000s.

The usable sample includes all males with complete information on the variables included in the analysis. Missing cases were leastwise deleted. Table 4-2 offers descriptive statistics for the variables included in the analysis.

Table 4-2. Sample size and Means (standard deviations in parenthesis)

	Chile		Mexico	
	N	Mean (sd)	N	Mean (sd)
Respondent's Education (E)				
Years of schooling	2,999	9.8 (4)	4,667	9 (4)
School sector: Primary				
Public	2,424	.82	4,332	.97
Private	273	.09	117	.03
Private-Subsidized	263	.09	---	---
School sector: Lower Secondary (only Mexico)				
Public	---	---	3,024	.97
Private	---	---	107	.03
School sector: High School				
Public	1,373	.71	1,517	.93
Private	243	.12	107	.07
Private-Subsidized	322	.17	---	---
PT1: Completing Primary				
Dropout	580	.19	648	.14
Public	1,913	.64	3,912	.84
Private	260	.09	107	.02
Private-Subsidized	239	.08	---	---
PT2: Entering High School (Chile) or Completing Lower Secondary (Mexico)				
Dropout	446	.19	971	.24

Public	1,373	.57	2,886	.73
Private	243	.10	103	.03
Private-Subsidized	322	.14	---	---
PT3: Completing High School				
Dropout	693	.35	1,484	.49
Public	833	.43	1,461	.48
Private	200	.10	86	.03
Private-Subsidized	226	.12	---	---
Respondent's Destination (D)				
ISEI score	2,999	37.5 (14.8)	3,756	37.1 (13.9)
Respondent's Origins (E)				
Parental Education (years)	2,999	6.1 (4.9)	4,667	5 (4.5)
Father's occupational status	2,999	33.1 (14.8)	4,667	31.4 (12.6)
Respondent's Birth Cohort (C)				
Cohort 0 (only Chile)	690	.23	---	---
Cohort 1	851	.28	655	.14
Cohort 2	896	.29	646	.14
Cohort 3	562	.18	931	.20
Cohort 4 (only Mexico)	---	---	2,435	.52

Analytical strategy

Models for Research Question 1

To address Research Question 1, I analyzed the association between social origins and the categorical outcome variables ‘placement transitions’ using a multinomial logistic regression (MNLR, or *mlogit*) approach (Long and Freese 2005). I decided in favor of using the *mlogit* approach, as opposed to an ordered regression approach, which would have been a more parsimonious alternative, after an empirical analysis of the order of the categories of my outcome variables: “0 Drop out”, “1 Public school”, “2 Private school” and “3 Private-subsidized school” (only for Chile). Because the order of these categories is not theoretically obvious, for each placement transition (PT1, PT2 and PT3) in Chile and Mexico, I conducted a Likelihood Ratio test (Goodman RC II model; Goodman 1979) to test the “proportional odds” or “parallel regression” assumption. In each one of the six LR tests (PT1-3 in Chile and PT1-3 in Mexico) the

parallel regression assumption was rejected at the .00 level. Therefore, I decided to treat the values of my outcome variable as unordered and to conduct the analysis using the MNL approach.

Three *mlogit* models, corresponding to the outcomes variables PT1, PT2 and PT3, were estimated separately for Chile and Mexico. All of them included the same set of independent variables: parental education, father's occupation, birth cohort, and interaction terms between parental education and birth cohort and between father's education and birth cohort. These interaction terms were included to capture changes in the effect of social origins over time. Models predicting PT2 and PT3 also included, among the independent variables, dummy variables for school sector during primary school, to capture the effects of previous educational pathways on subsequent educational continuation and placement. These *mlogit* models estimate the log of the odds that an individual eligible for completing a given Placement Transition will complete the transition attending a particular school sector as opposed to dropping out, holding all covariates constant. Because of the difficulties of interpreting the results in the log-odd scale, I follow the convention of reporting tables with the *mlogit* coefficients and their statistical significance, and then interpreting the results using predicted probabilities.

These models are reported and discussed in Chapter 5.

Models for Research Question 2

For Research Question 2, given the continuous nature of the outcome variable (standardized ISEI score), I adopt a linear regression approach. My explanatory variables are respondent's social origins (indexed as parental occupation and parental education), educational attainment (years of schooling), private school attendance dummies for each level, and interaction terms between years of schooling and private school dummies.

I ran the models in three steps. Model (1) includes only the predictors included in the “basic” social stratification model: father’s occupation, parental education and years of schooling. Model (2) includes school sector dummies, informing about the direct effects of private schooling attendance by level and also whether private schooling mediates the effect of the basic stratification predictors included in Model (1). Finally, Model (3) adds the interaction terms to observe how the effects of years of schooling vary by school sector.

These models are reported and discussed in Chapter 6.

Methodological Innovations and Limitations

Innovations

This study provides a more comprehensive analysis of the role that school sector plays in the stratification of educational opportunities in Latin America than existing in any previous research.

First, I produce a more complete assessment of how stratification varies by educational level. Previous studies of school sector stratification in Latin America only consider whether adolescents of age 15 (OECD 2010) or ages 15 to 18 (Marteleto et al 2012) *attended* lower secondary or high school in the public or private sector; in my analysis, this might be comparable to models predicting Placement Transition 2 (grade 9 in Chile and Mexico). Previous studies, however, do not consider whether individuals *graduated* or not from a private or public high school, as I do in models corresponding to Placement Transition 3, nor consider school sector stratification at the primary level, as I do in models looking at Placement Transition 1.

Second, previous studies use a dichotomous measure of school sector (public/private), while I use a measure with multiple values that captures complex forms of school sector

differentiation, such as in Chile where voucher schools are categorically different from both public and (independently funded) private schools. Placement transitions allow me to observe both vertical stratification (by analyzing how socioeconomic background affects the probability of dropping out) and also horizontal stratification (socioeconomic background effects on school sector placement) in a single model.

In models addressing Research Question 2, my main contribution is to include a dimension of educational attainment, school sector, which has not been properly controlled for in previous analysis of the intergenerational social stratification in Latin America. This problem might be thought of as an omitted variable bias (Wooldridge 2006). I solve this problem and therefore improve on previous research by introducing, in my linear regression models, measures of school sector that capture an important qualitative dimension of educational attainment in Latin America.

Limitations

There are two well-known limitations of cohort analysis of cross-sectional survey data. First, it is hard to distinguish between cohort and period effects (Glenn 2005). Second, data for older cohorts might biasedly represent the population due to “selective mortality” (i.e. socioeconomic status affects longevity) (Hayward, Pienta, and McLaughlin 1997). I might also add that my results reflect associations between variables but are not conclusive about causal relationships, because a number of unobserved factors not accounted for in my models might affect the results (Schneider et al. 2007). Interpretation of the results is therefore conducted with caution, taking this limitation of the design into consideration.

Although the data used in the analysis provides trustworthy information about all the observed dimensions of the analysis, there are dimensions that are not considered due to data

limitations, including gender (Chilean data surveyed only males) and school sector at the tertiary level (not included in the Chilean data). These are important dimension of the educational stratification to be explored in the future.

Chapter 5

School Sector and Educational Stratification

In this chapter I present the results of analysis addressing Research Question 1, which refers to the trends over time in the role of school sector in educational stratification in Chile and Mexico. To address this question, I use a multinomial logistic regression approach to analyze the association between socioeconomic origins (measured as father's occupational status and parental years of education) and individual outcomes on a hierarchical sequence of *school sector placement transitions*. I study three Placement Transitions: PT1 is completing primary, PT2 is entering high school (or completing lower secondary school in the case of Mexico) conditional on completing primary, and PT3 is completing high school, conditional on entering high school. Placement Transitions are the outcome variables of this analysis. They combine the vertical (school continuation) and the horizontal (school sector placement) dimensions of educational attainment into a single measure that takes value of zero (0) for those individuals not making the transition (i.e. dropping out), one (1) for those completing the transition in a public school, two (2) for those completing it in a private school, and three (3) for those completing it in a private-subsidized school (i.e. private school that receives governmental subsidies such as vouchers). For each Placement Transition, I conduct a separate multinomial regression and interpret the results using predicted probabilities.

Throughout this chapter, an important distinction to keep in mind is between the vertical inequality of educational opportunity, which refers to the effect of socioeconomic background on the chances of continuing towards higher levels in the school system, and horizontal inequality of educational opportunity, referred to the effect of background on school sector placement within a

particular level. For the interpretation of the results, declines in the probability of dropping out among the low and middle socioeconomic strata would indicate *vertical equalization* in educational opportunities; and high or increasing probabilities of attending private schools among elite and middle socioeconomic groups would reveal persistent or growing *horizontal inequalities* of educational opportunities organized around school sector.

This chapter contains three sections: descriptive statistics, the multivariate analysis section based on the multinomial logistic regressions and predicted probabilities, and finally a brief summary and discussion of the findings. In a nutshell, the analysis confirms that horizontal differences across socioeconomic groups in school sector placement are a relevant dimension of educational stratification in both Chile and Mexico. Interestingly, sector placement stratification is partially a result of, but to a larger extent predates the declines in vertical educational inequality that the literature has often assumed to be a precondition for the emergence of horizontal inequalities. Also, school sector placement in primary school is particularly consequential for placement transition outcomes at later stages of the educational trajectory; demonstrating the importance of horizontal inequalities at very early stage of the school trajectory also expands the educational stratification literature, which for the most part has narrowly focused on curricular tracking at later stages.

Descriptive Results

Table 5-1 offers descriptive statistics for the main variables used in the analysis and their variation across birth cohorts. These descriptive results confirm the existence of a steady process of educational expansion in both countries, moderate trends of privatization that are stronger in Chile than in Mexico, and also a moderate trend of occupational upgrading among respondent's fathers in both countries.

Table 5-1. Descriptive Statistics: Proportions and Means across Birth Cohorts—Chile and Mexico

	C0 1937-46	C1 1947-56	C2 1957-66	C3 1967-76	C4 1977-86
Chile					
Years of schooling	7.8 (4.4)	9.6 (4.2)	10.6 (3.5)	11.0 (3.4)	.
School Transitions ^a					
Primary Complete (T1)	64.9	79.5	86.1	87.4	.
Enters High School (T2)	70.9	78.9	83.9	88.1	.
High School Complete (T3)	54.9	63.1	66.0	74.0	.
School Sector					
Primary: private	9.4	10.1	10.3	6.9	.
Primary: private-subsidized	7	8.5	8.8	11.9	.
High school: private	15.9	13.9	11.8	12.3	.
High school: private-subsidized	13.6	10.9	17.4	23.8	.
Parental education ^b	4.6 (4.7)	5.6 (4.8)	6.8 (4.9)	7.2 (4.8)	.
Father's occupation ^c	30.9 (14.4)	33.3 (15.3)	33.6 (14.6)	33.2 (15.0)	.
N (full sample = 2,998)	700	849	881	568	.
Mexico					
Years of schooling	.	7.8 (5.2)	9.2 (4.5)	9.7 (4.0)	10.4 (3.6)
School Transitions ^a					
Primary Complete (T1)	.	69.5	85.8	90.7	95.1
Lower Sec Complete (T2)	.	54.1	68.9	74.1	80.0
High School Complete (T3)	.	71.5	60.3	54.3	59.7
School Sector					
Primary: private	.	5.9	2.2	2.3	2.8
Lower Secondary: private	.	9.7	5.8	5.1	3.3
High school private	.	4.4	4.2	8.8	9.1
Parental education ^b	.	2.8 (3.8)	3.8 (4.1)	4.7 (4.4)	6.5 (4.5)
Father's occupation ^c	.	29.5 (12.6)	31.0 (12.2)	31.9 (11.9)	34.6 (14.8)
N (full sample = 4,668)	.	693	1,059	1,453	1,463

Notes. Standard Deviations in parentheses. a) T2 conditional on completing T1; T3 conditional on completing T2. b) Years of schooling completed. c) International Socio-Economic Index of Occupational Status (ISEI).

Three measures reveal the existence of a trend of educational expansion in Chile and Mexico. First, in both countries there is a steady rise in the mean years of schooling of the respondents and their parents. Among Chileans, the average years of schooling increases from 7.8 years in the older cohort to 11 years in the younger cohort, and a similar trend is found in the Mexican sample. Average parental education also increased in both countries, from 4.6 years to 7.2 years of schooling in Chile, and from a somewhat lower initial average of 2.8 towards 6.5

years of schooling in Mexico. Second, there is a reduction of education's overall dispersion, as measured by declining standard deviations of respondent's years of schooling in both countries, from 4.4 to 3.4 in Chile and from 5.2 to 3.6 in Mexico. A decline in the dispersion of educational attainment means that a larger proportion of the population is distributed around the population mean. Among the parents, however, the decline in dispersion is less clear. The third and final measure reflecting the expansion of education is the proportion of the sample completing each one of the school transitions under study. In both Chile and Mexico, the proportion of students completing primary school (T1) goes from about 65% to about 90% as we move from the older to the younger cohort. Among those completing T1, the proportion completing transition 2 grows over time to reach 80% in Mexico and 88% in Chile by their respective youngest cohorts. Among those "at risk" of completing high school (T3), however, we find a notorious difference between both countries. In Chile the conditional transition rate for high school graduation starts at 55% in the older cohort and reaches about 75% in the younger cohort. The Mexican sample shows the inverse pattern, becoming increasingly selective over time, with only 60% of success in the most recent cohort. This finding is consistent with previous research by Torche (2010b), who using data from EMOVI-2006 showed a decline in conditional high school graduation rates in Mexico for those born between 1967 and 1976 (cohort 3 in my study), who faced this particular transition during the second half of the 1980s, that is, in the midst of the economic crisis known as the "lost decade" for Latin America.

Table 5-1 also shows that, at any given historical period, the average educational attainment of the population was higher in Chile than in Mexico. For example, mean years of schooling in Mexico was 7.8 for individuals born between 1947 and 1956 (Cohort 1), whereas the same number was reached at in Chile in the previous 1937-46 cohort (Cohort 0). Most values in years of schooling, school transitions and parental education variables show the same pattern of Mexico's "catching up" to Chile's educational levels with one or two cohorts of delay. This

confirms that educational expansion occurred earlier and most consistently (including high school completion) in Chile.

Table 5-1 also shows differences in levels and trends of private school enrollment between Chile and Mexico. In Chile, the combined enrollment share of the private sector (including both private and private-subsidized schools) increases over time at all levels, reaching about 20% in primary and about 25% in high school by the younger cohort in the Chilean sample (1967-76). Within the Chilean private sector, the most dynamic sector is the private-subsidized sector, which grows from 7 to 12% in primary and from 14 to 24% at the high school level¹⁰. In Mexico, trends in private school enrollment differ by level; in primary and lower secondary the proportion attending private schools declines across cohorts, and in high school it increases over time, reaching 9% in the young cohort. Still, the size of the private school sector is noticeably smaller in Mexico than in Chile, which is consistent with differences in the historical traditions and recent policies in each of these countries, as reviewed in Chapter 3. Finally, Table 6 shows information on father's occupation. In Chile and Mexico we find a moderate increase in the occupational levels of the respondent's fathers, most likely reflecting industrialization and occupational upgrading in the previous generations.

Descriptive Trends in Placement Transitions

Table 5-1 (above) reports data on school transitions and school sector placement separately. In Figure 5-1 and Figure 5-2 (below), I show aggregate trends across cohorts for the combined outcome variables of the analysis, Placement Transitions (PT) 1, 2 and 3. Each vertical

¹⁰ This privatization trend intensified in the years after the CSMS-2001 was collected. According to the official statistics of the Ministry of Education in Chile, in 2009 private-voucher schools reached 51% of the total primary and secondary school enrollment, outgrowing the 42% student share at public schools (Marcel and Raczynski 2009).

bar shows the proportion of people in each sector, and also those who dropped out and ultimately failed to make the placement transition.

Figure 5-1 portrays the data for Chile. First, it reveals a clear decline across cohorts in the proportion of dropouts in each transition. In PT1, the dropout proportion goes from 35% in C0 to 13% in C3; in PT2, from 29% to 12%; in PT3, from 45% to 26%. This suggests a trend of expansion-driven, vertical-equalization in the completion of primary and secondary education in Chile, to be confirmed by the multivariate analysis. In PT1 it is the public sector that captures most of the expansion, followed by the private-subsidized sector. In PT2 and PT3 it is the private-subsidized sector that grows most consistently over time, even though the relative size of the public sector remains larger. Interestingly, the private-subsidized proportion grows more rapidly in between cohorts C2 and C3, coinciding with the implementation of universal school vouchers after the privatization reform of the early 1980s in Chile. The size of the private sector remains rather stable across cohorts for all levels, receiving about 10% of the pool at risk of making each transition. The structural differentiation between a dynamic, growing private-subsidized sector and a stable private sector is a very important distinction to understand trends in educational stratification in Chile, as demonstrated by the multivariate analysis below.

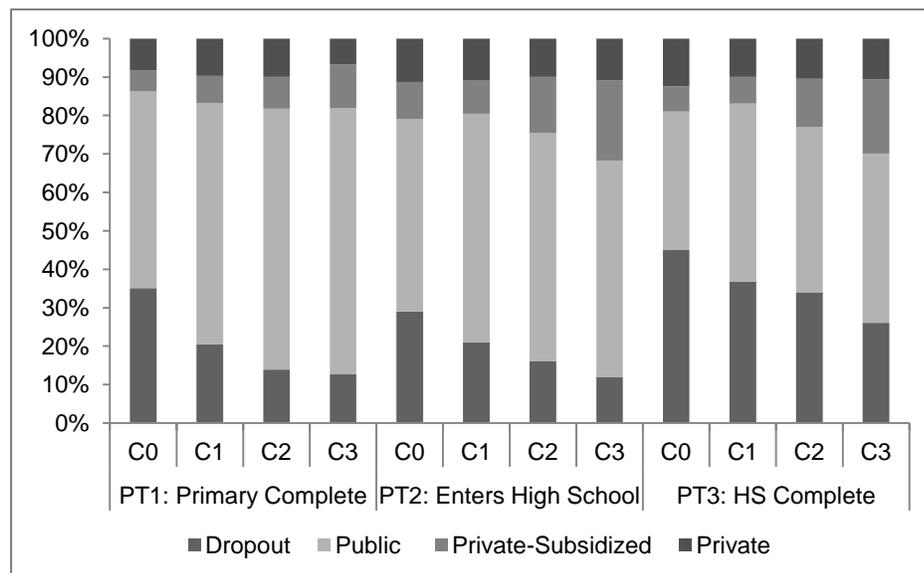


Figure 5-1. Placement Transition Rates by Birth Cohort: Chilean men, born 1937-76.

Figure 5-2 presents data for Mexico. The dropout rates decline over time for PT1 and PT2, but they increase in PT3 up to cohort 3. The proportion of those completing placement transitions in the public school sector increases or decreases proportionally at the moment of primary school graduation (PT1) and lower secondary school graduation (PT2), but decreases noticeably for high school graduation. Finally, the proportion making the placement transitions in private schools shows slight declines at all levels across cohorts. It is noticeable that private school placement rates are larger in the older cohort at every level, and substantial declines occur between cohort 1 and cohort 2, with minor changes in the younger cohorts.

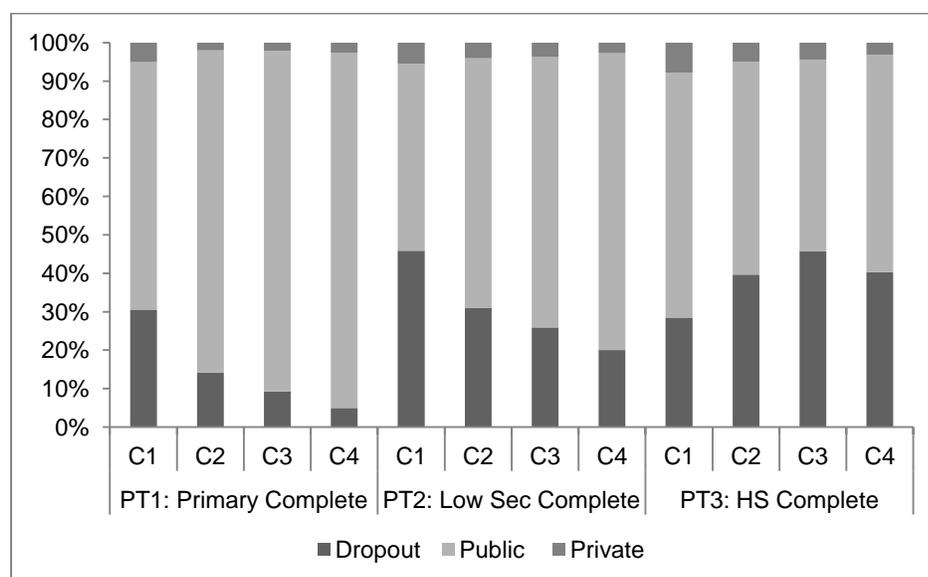


Figure 5-2. Placement Transition Rates by Birth Cohort: Mexican men, born 1947-86.

Multivariate analysis: the Effects of Social Origins on Placement Transitions

In this section I consider the association between family socioeconomic origins and placement transitions using a multinomial logistic regression approach (*mlogit*). First, I predict school sector placement at the completion of primary school (PT1) as a function of

socioeconomic origins (parental education and father's occupational status), birth cohort and interaction terms between social origins and cohorts. Then I predict separate models for PT2 and PT3 which include one additional predictor: a dummy variable for school sector in primary school, meant to capture pathway effects. In each of these *mlogit* regression models, the reference category of my outcome variable is 'dropout', and thus regression coefficients reflect the effect of one unit increase in a particular predictor (e.g. one more year of parental education) on the log-odds of being placed in a school sector (e.g. private school) compared to the odds of dropping out. Because of the difficulties of interpreting the results in the log-odd scale, I first report tables with the *mlogit* regression estimates, and then interpret the results using predicted probabilities for "theoretically focal" groups. My focal groups of interest here correspond to "elite", "middle" and "low" socioeconomic (SES) groups. I define these SES groups relative to the distribution of the socioeconomic origins variables for the sample of respondents eligible for completing each transition in each country. "Elite" is defined as values for parental education and father's occupation that are two standard deviations above the mean; "middle" strata take mean values; and "low" strata as the values that are one standard deviation below the mean. For example, for PT1 in Chile, the mean value for parental education is 6 years of schooling and the standard deviation is 4.9, thus the elite value is 16, the middle value is 6 and the low value is 1; in Mexico, the corresponding values are 5 (mean), 4.5 (standard deviation) and 14 (elite), 5 (middle) and 0 (low). At PT2 and PT3 the mean values are larger because of social selection across transitions. Using very high values for the "elite" group is consistent with the extreme income concentration and "asymmetrical" social structure that exists in Chile and Mexico (Torche 2009). Defining the focal groups in this manner, and based on the regression estimates, I predict the probability that individuals from elite, middle and low socioeconomic strata will either dropout or attend a public, private or private-subsidized school at the moment of completing primary, entering high school and completing high school.

Placement Transition 1: Completing Primary

Table 5-2 presents the results for the model predicting outcomes in the first placement transition: completing primary school, which in Chile means completing grade 8 and in Mexico grade 6. In order to interpret the results, I turn to the probabilities plotted below in Figure 5-3.

Table 5-2. Multinomial logistic regression for Placement Transition 1—Completing Primary (Dropout reference category)

VARIABLES	Chile			Mexico	
	Public	Voucher	Private	Public	Private
Parental education	0.210*** (0.0315)	0.274*** (0.0564)	0.383*** (0.0487)	0.283*** (0.0392)	0.492*** (0.0716)
Father's occupation	0.0653*** (0.0123)	0.0661*** (0.0163)	0.0917*** (0.0150)	0.0353*** (0.0101)	0.0613*** (0.0209)
Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	----	----
Cohort 1	1.202*** (0.459)	1.001 (0.642)	1.642** (0.717)	(omitted)	(omitted)
Cohort 2	1.202** (0.501)	0.474 (0.674)	0.766 (0.749)	0.926* (0.485)	2.118* (1.099)
Cohort 3	2.095*** (0.506)	0.736 (0.666)	-0.667 (1.055)	1.576*** (0.464)	0.804 (0.978)
Cohort 4 (only Mexico)	----	----	----	2.438*** (0.412)	0.870 (0.885)
Parental education x Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	----	----
Parental education x Cohort 1	-0.0771* (0.0428)	-0.0446 (0.0698)	-0.0991 (0.0666)	(omitted)	(omitted)
Parental education x Cohort 2	-0.125*** (0.0436)	-0.0614 (0.0694)	-0.144** (0.0676)	0.0121 (0.0644)	-0.316*** (0.121)
Parental education x Cohort 3	-0.0197 (0.0508)	-0.0441 (0.0740)	0.109 (0.0958)	-0.102* (0.0533)	-0.212** (0.0988)
Parental education x Cohort 4 (only Mexico)	----	----	----	0.00969 (0.0492)	0.0506 (0.0881)
Father's occupation x Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	----	----
Father's occupation x Cohort 1	-0.0133 (0.0168)	-0.0140 (0.0222)	-0.0217 (0.0203)	(omitted)	(omitted)
Father's occupation x Cohort 2	0.00809	0.0139	0.0155	0.0135	0.00519

	(0.0186)	(0.0230)	(0.0219)	(0.0182)	(0.0343)
Father's occupation x Cohort 3	-0.0391**	0.0108	-0.0266	0.00418	0.0193
	(0.0176)	(0.0219)	(0.0223)	(0.0172)	(0.0294)
Father's occupation x Cohort 4 (only Mexico)	---	---	---	-0.0208	-0.0344
				(0.0144)	(0.0249)
Constant	-2.080***	-4.714***	-6.270***	-1.267***	-6.249***
	(0.337)	(0.451)	(0.539)	(0.278)	(0.717)
Observations	2,998	2,998	2,998	4,667	4,667

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Cohort 0 is reference category for all interaction terms in Chilean models.

Figure 5-3 reports changes across cohorts in the influence of family background on the probability of dropping out or completing primary education in different types of schools in Chile and Mexico. Findings for individuals born in families of low and middle socioeconomic background are very similar between countries, but trends for the elite differ markedly. For the lower strata in Chile and Mexico (groups 1 and 2) we see a clear and consistent decrease across cohorts in the probability of dropping out, particularly intense between the first and second cohorts, and a proportionate increase in the probability of attending public schools. In Chile, the chances of dropping out for the lower SES group (group 1) fall from 64% in the 1937-46 cohort to 42% in the 1947-56 cohort, and to 32% in the 1967-76 cohort, the younger in the Chilean sample. In Mexico, the chances of dropping out for the low SES group (group 2) go from 57% in the youngest, 1947-56 cohort to 28% in the 1957-66 cohort, and finally to 15% in the 1977-86 cohort. These results can be interpreted as a decline in the vertical inequality of educational opportunity at the level of primary education completion in both Chile and Mexico. The decline in vertical inequality reflect the process of expansion and universalization of primary education, a process that was historically led by the State through policies of inclusion of the lower strata into the public school sector. Governmental policies targeting primary school expansion in both countries during the 1950s and 1960s probably account for part of the strong change in the earlier cohorts. The private sector played almost no role in expanding access for this lower socioeconomic group, as can be appreciated in probabilities of completing the primary transition

in private school around zero for the whole period in both countries. Overall, however, equalization is not total, as the dropout chances for low SES groups of the younger cohorts in the sample remain substantial and significantly larger than for middle and elite SES groups.

For families in the middle of the socioeconomic distribution in both countries (groups 3 and 4), we also find a decline in the probability of dropping out and an increase in the public school group, but changes across cohorts are less dramatic than in the lower strata, reflecting the already higher educational participation of the middle socioeconomic group in the early cohorts. The probability of attending a public school remains larger for middle-SES groups in each cohort. A minor but noticeable change is observable in the private sector in Chile, where the private sector had a small decline between 1957-66 and 1967-76 cohorts, in parallel to a small increase in the private-subsidized group, which goes from 7% in the 1957-66 cohort to 10% in the 1967-76 cohort. This coincides with the implementation of the voucher reform in the 1980s and suggests that a small part of the middle strata that was previously attending private schools started taking advantage of the possibility of attending a cheaper, publicly subsidized private primary school as soon as the voucher reform was introduced.

Finally, in Chile and Mexico the probability of someone from an elite background (groups 5 and 6, respectively) dropping out before completing primary has been close to zero for the complete period under study. In Chile there is a clear decrease in the probability of attending public school and an increase over time in the probability of attending a private school, particularly a private-subsidized, whereas in Mexico even the elite is more likely to attend a public school. Trends for the elite group in Chile seem consistent with the “replacement” hypothesis that investments in private schools would increase in Latin America given expansion-driven equalization in primary school completion. The finding that growing horizontal stratification in Chile occurs already at the moment of primary school completion, that is, very early in the educational career, is a finding that expands extant literature, because horizontal

stratification in education opportunity have been conceptualized and analyzed only at higher educational levels. In Mexico, on the contrary, the decline in vertical stratification at this level does not turn into school sector redistribution as in Chile, which leaves the open question as to what mechanisms, if any, are used by the Mexican elite to maintain their advantages at the level of primary school.

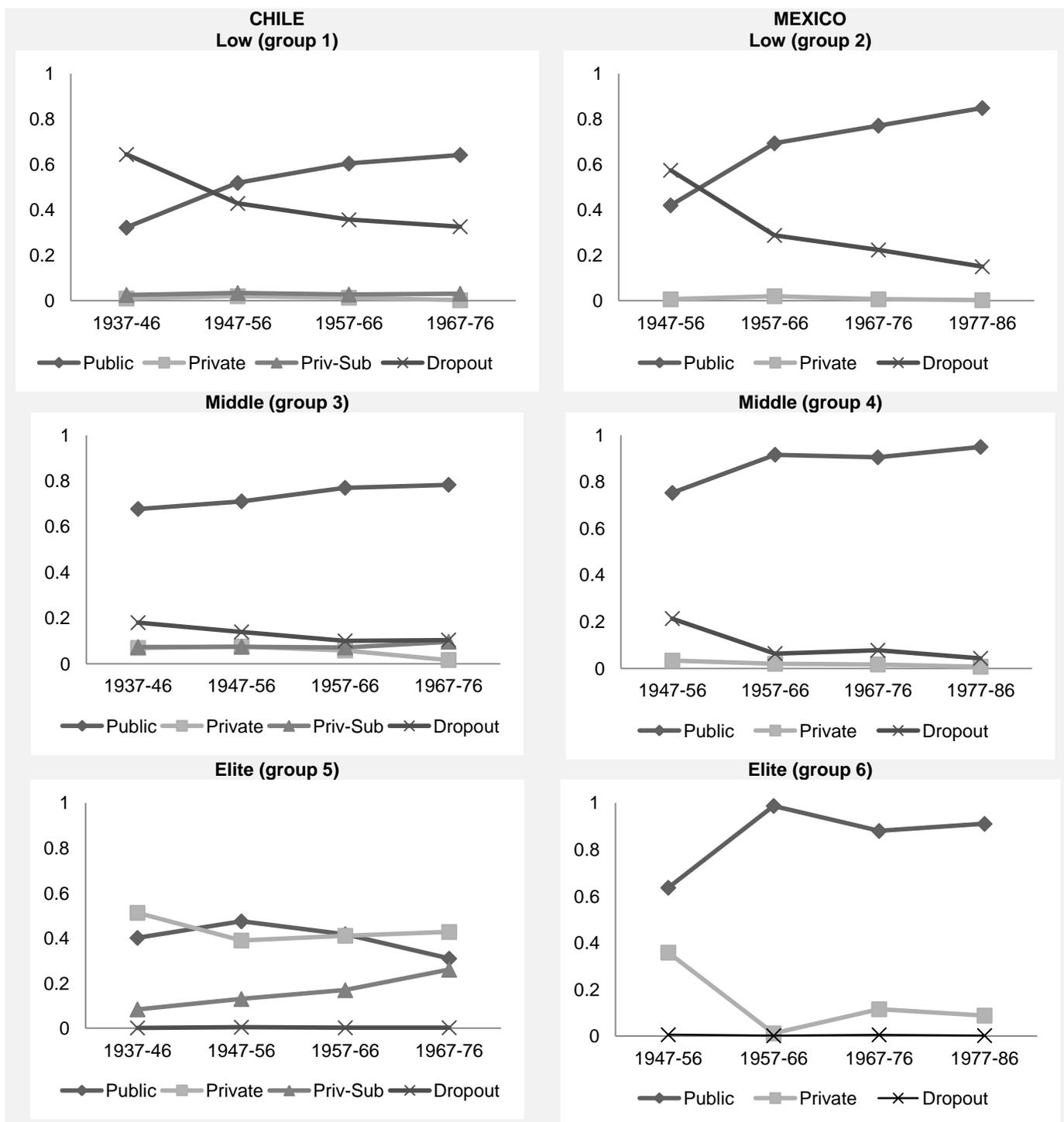


Figure 5-3. Predicted Probabilities for Low, Average and Elite Socioeconomic Background Males in Placement Transition 1: Completing Primary. Chile And Mexico, 1937-86

Placement Transition 2: Entering High School

Table 5-3 presents estimates for the model predicting outcomes in the second placement transition, which in Chile is entering high school and in Mexico is completing lower secondary. In both countries this means completing grade 9. The sample for this model includes only those respondents who did not dropout in PT1. All independent variables and interaction terms included in the model for PT1 are also included here, but this PT2 model includes one additional variable: school sector in primary school. This is a set of dummies meant to account for the different pathways students can take as they move up in a horizontally stratified system.

Table 5-3. Multinomial logistic regression for Placement Transition 2-Grade 9 complete (Dropout is omitted outcome)

VARIABLES	Chile			Mexico	
	Public	Voucher	Private	Public	Private
Parental education	0.166*** (0.0359)	0.197*** (0.0474)	0.196*** (0.0515)	0.181*** (0.0394)	0.144 (0.0882)
Father's occupation	0.0456*** (0.0125)	0.0147 (0.0157)	0.0488*** (0.0161)	0.0320** (0.0125)	0.0773** (0.0313)
Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	---	---
Cohort 1	1.065* (0.546)	0.157 (0.695)	0.483 (0.847)	(omitted)	(omitted)
Cohort 2	0.784 (0.580)	0.375 (0.688)	-1.011 (0.893)	0.943** (0.470)	1.602 (1.490)
Cohort 3	0.770 (0.784)	0.473 (0.849)	1.405 (1.107)	1.567*** (0.998)	-0.123 (1.533)
Cohort 4 (only Mexico)	---	---	---	1.460*** (0.415)	0.0988 (1.331)
School Sector Primary					
Public	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
Private	0.163 (0.320)	0.825** (0.402)	3.768*** (0.338)	-1.068*** (0.389)	4.574*** (0.401)
Private-subsidized (only Chile)	-0.243 (0.265)	2.210*** (0.263)	0.453 (0.407)	---	---
Parental education x Cohort 0	(omitted)	(omitted)	(omitted)	---	---
Parental education x Cohort 1	-0.0194 (0.0519)	-0.0546 (0.0699)	0.0571 (0.0782)	(omitted)	(omitted)
Parental education x Cohort 2	-0.0418 (0.0489)	-0.0656 (0.0619)	0.0938 (0.0730)	-0.0129 (0.0496)	0.0224 (0.127)
Parental education x Cohort 3	-0.0335 (0.0504)	-0.0377 (0.0616)	-0.0521 (0.0890)	0.0383 (0.0479)	0.249* (0.127)
Parental education x Cohort 4	---	---	---	0.0132 (0.0427)	0.0987 (0.100)
Father's occupation x Cohort 0	(omitted)	(omitted)	(omitted)	---	---
Father's occupation x Cohort 1	-0.0149 (0.0172)	0.00949 (0.0217)	-0.0200 (0.0227)	(omitted)	(omitted)
Father's occupation x Cohort 2	0.00562 (0.0179)	0.0301 (0.0218)	0.0103 (0.0234)	-0.0141 (0.0158)	-0.0334 (0.0417)
Father's occupation x Cohort 3	0.0160 (0.0274)	0.0435 (0.0292)	0.0133 (0.0303)	-0.0278* (0.0157)	-0.0299 (0.0394)
Father's occupation x Cohort 4	---	---	---	-0.0159 (0.0139)	-0.0232 (0.0342)
Constant	-1.691*** (0.435)	-2.982*** (0.519)	-4.818*** (0.632)	-1.494*** (0.368)	-6.979*** (1.210)
Observations	2,384	2,384	2,384	3,960	3,960

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In Chile, Cohort 0 is the omitted reference category for the Cohort independent variable. In Mexico, Cohort 1 is the omitted category.

Figures 5-4 depicts changes across cohorts in the probability of dropping out or attending a public, a private or a private-subsidized high school for Chilean students who completed primary school. The results for Chile show two clear trends. First, among those born in low and middle socioeconomic strata (groups 1 to 6) there is a persistent decline in the probability of dropping out. Given that for the elite (groups 7 to 9) the chances of dropping out were close to zero at all periods, these results show that vertical inequalities in accessing high school have diminished across cohorts in Chile. This does not mean that inequalities have disappeared completely; for the younger Chilean cohort (1967-76), the probabilities of dropping out for the low socioeconomic groups were 30% (group 1), 9% (group 2), or 16% (group 3) depending on their school sector in primary school.

Second, school sector placement by grade 9 is strongly conditioned by the pathway followed by students in primary school. In other words, those who attended primary school in the public, private or private-subsidized sector are more likely to continue, respectively, in a public, private or private-subsidized high school. For some groups, this “pathway closure” has been a constant throughout the whole period under study, particularly middle and elite groups who attended primary school in the public sector (groups 4 and 7) and the elite group who attended primary in the private sector (group 8). For other groups, pathway closure has intensified over time, such is the case in middle and elite groups attending private-subsidized primary school (groups 6 and 9) and the middle SES groups in private primary (groups 5).

These results provide mixed support for the EMI-sector hypothesis that school sector stratification will increase over time given declines in vertical stratification. On the one hand, group 8 reveals the existence of a segment in the Chilean elite that has secured attendance into the private high schools *even before* the decline in vertical stratification signaled by falling dropout probabilities in the lower and middle SES groups. This defies the claim of the EMI-sector

hypothesis that the effect of background on the chances of attending a private school will increase *as a result of* or *as a reaction against* vertical equalization. On the other hand, the intensification of pathway rigidity for middle and elite groups attending private-subsidized primary schools (groups 6 and 9) support the EMI-sector hypothesis. Groups 9 and 6 reveal that both elite and middle groups benefited from the increased in public subsidies for private schools introduced by the voucher reform of 1980s. Interestingly, also group 3, corresponding to low SES families in the private-subsidized sector, increased their pathway rigidity, revealing the internal heterogeneity of the subsidized or voucher sector. Also, the noticeable increase in attendance to private school among middle SES students who attended private school in primary (group 5) is consistent with the EMI-sector predictions.

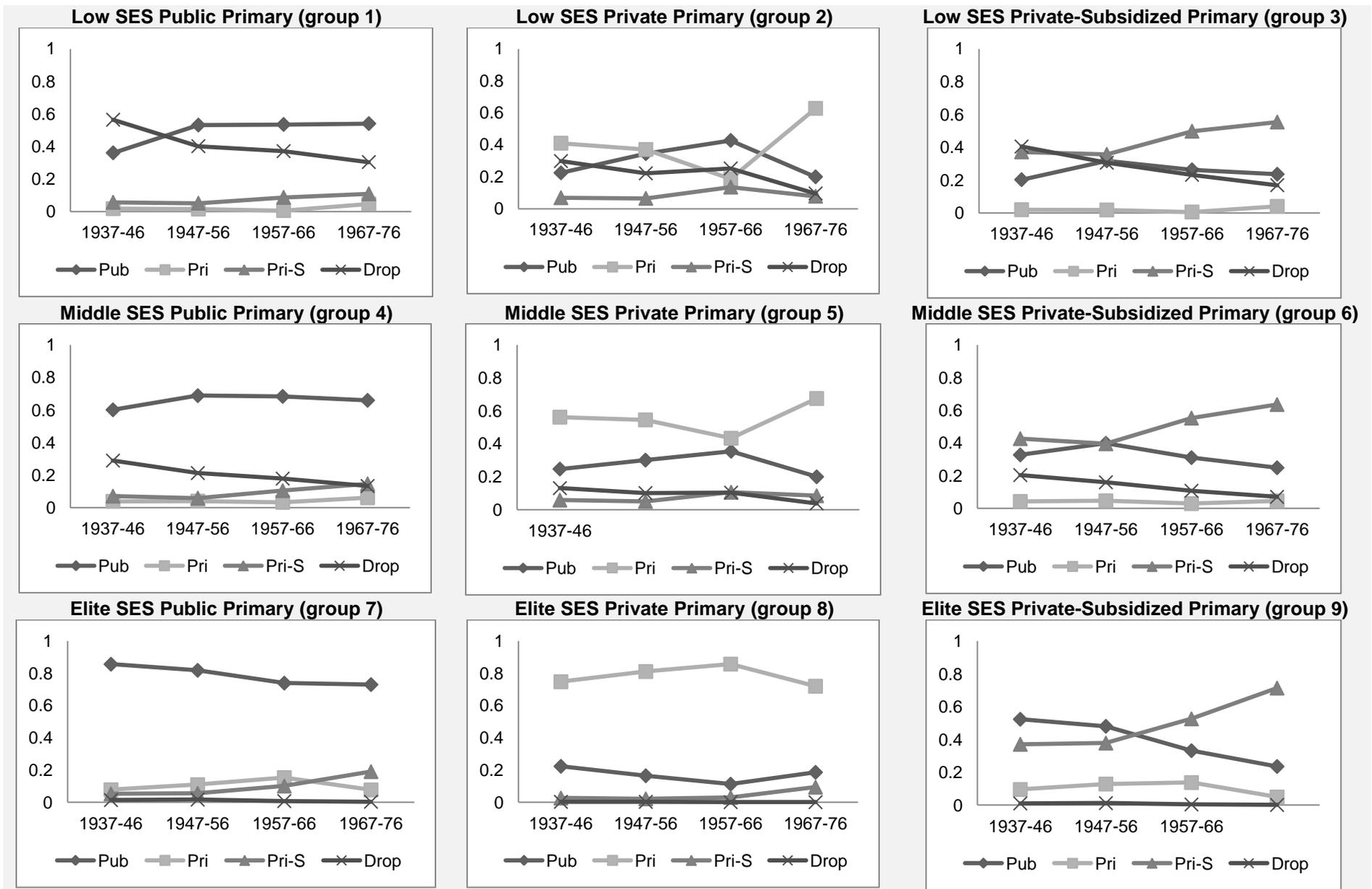


Figure 5-4. Predicted Probabilities by Socioeconomic Background and School Sector in Primary for Placement Transition 2: Entering High School. Chile

Figure 5-5 presents results for placement transition 2 in Mexico. First, we find that the probability of dropping out among the low and middle SES groups attending public schools (groups 1 and 3) show a modest decline across cohorts, but even for the later period they remain high, specially for the low SES group coming from a public primary school at 39% (group 1). These findings suggest a moderate trend of equalization in the vertical stratification of lower secondary completion in Mexico, yet differences with the elite persist significant. Dropout chances do not change much for low and middle groups attending private schools (groups 2 and 4); this shows, again, that it has been the public sector the one driving vertical equalizing at this level. Second, as in Chile, we find strong pathway effects, particularly for the elite. Among elite SES groups (groups 5 and 6), pathway rigidity was as strong for the older cohort as it was for the younger cohort, revealing that a strong pattern of school sector horizontal stratification has been in place even before the equalization of access. Among middle SES groups, the persistently low (group 3) or decline (group 4) in the probability of attending a private school in grade 9 provides no support for EMI-sector hypothesis in Mexico.

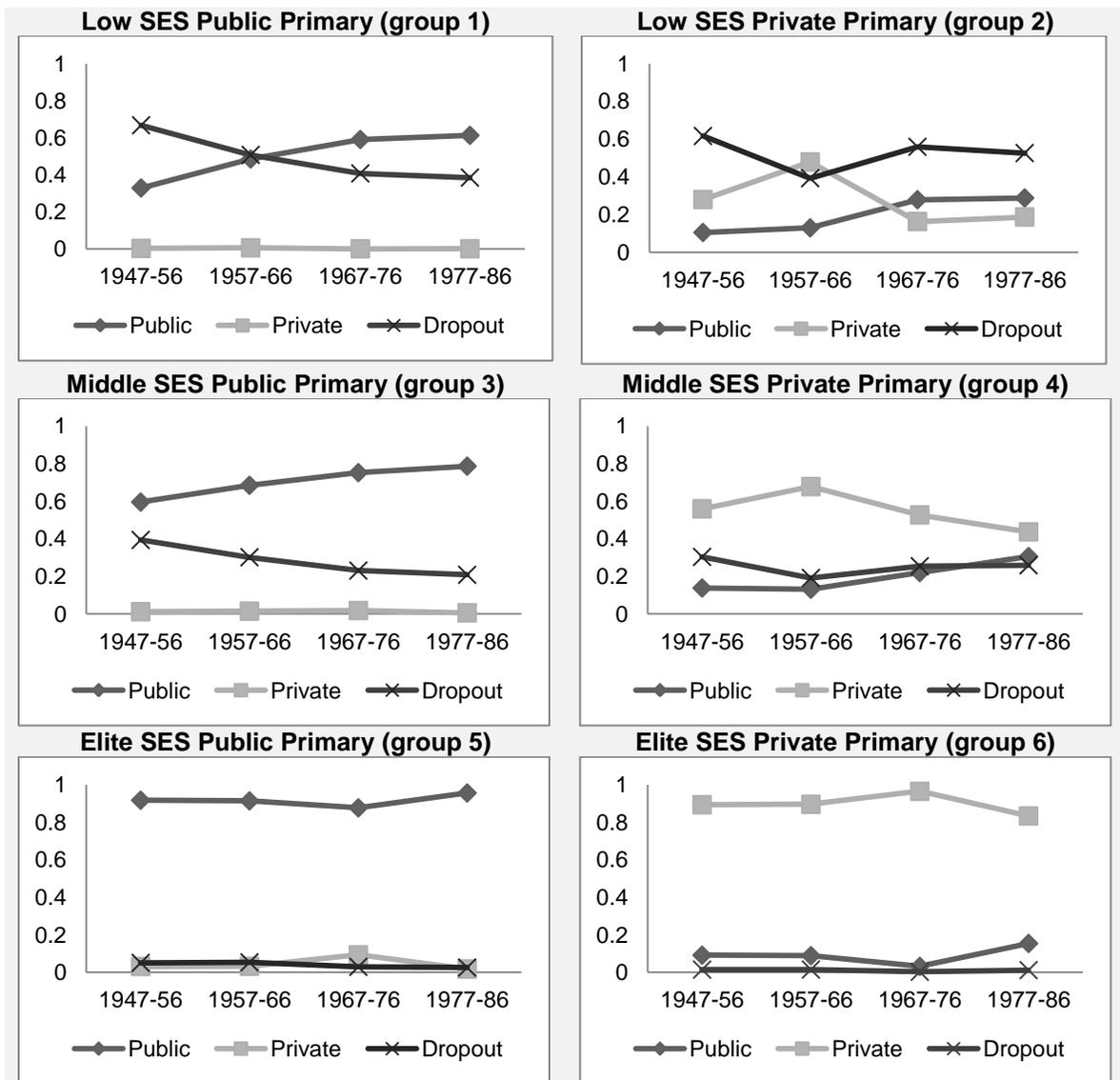


Figure 5-5. Predicted Probabilities by Socioeconomic Background and School Sector in Primary for Placement Transition 2: Completing Lower Secondary. Mexico

Placement Transition 3: Completing High School

Table 5-4 presents estimates for multinomial logistic regression models predicting outcomes in the third and final placement transition under study: graduating from high school. In both countries this means completing grade 12. Only those respondents who did not dropout in

PT2 are included in models for PT3. All independent variables included in the model for PT2 are also included here.

Table 5-4. Multinomial logistic regression for Placement Transition 3-Completing High School (Dropout is reference outcome)

VARIABLES	Chile			Mexico	
	Public	Voucher	Private	Public	Private
Parental education	0.120*** (0.0323)	0.0861 (0.0628)	0.140** (0.0575)	0.105** (0.0438)	-0.0657 (0.0926)
Father's occupation	0.00937 (0.00933)	-0.0330 (0.0204)	0.0122 (0.0154)	0.0166 (0.0150)	0.0544* (0.0331)
Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	---	---
Cohort 1	0.768* (0.459)	-0.835 (0.913)	-1.299 (0.981)	(omitted)	(omitted)
Cohort 2	0.268 (0.463)	-0.653 (0.851)	-1.625* (0.938)	0.0925 (0.585)	-0.420 (1.742)
Cohort 3	0.477 (0.549)	-0.411 (0.868)	0.331 (0.940)	-0.409 (0.554)	-3.403** (1.643)
Cohort 4 (only Mexico)	---	---	---	-0.283 (0.503)	-2.626* (1.450)
Primary School Sector					
Public	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
Private	-0.143 (0.245)	0.552 (0.362)	3.399*** (0.274)	-0.220 (0.403)	5.411*** (0.439)
Private-subsidized (only Chile)	-0.561** (0.230)	1.878*** (0.217)	0.0948 (0.423)	---	---
Parental education x Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	---	---
Parental education x Cohort 1	-0.0422 (0.0421)	0.0382 (0.0806)	0.0772 (0.0900)	(omitted)	(omitted)
Parental education x Cohort 2	-0.0132 (0.0400)	-0.00396 (0.0709)	0.0854 (0.0761)	0.0400 (0.0546)	0.284* (0.149)
Parental education x Cohort 3	-0.0515 (0.0468)	0.00459 (0.0728)	0.0187 (0.0790)	-0.0094 (0.0499)	0.372*** (0.143)
Parental education x Cohort 4 (only Mexico)	---	---	---	0.0453 (0.0459)	0.233** (0.105)
Father's occupation x Cohort 0 (only Chile)	(omitted)	(omitted)	(omitted)	---	---
Father's occupation x Cohort 1	0.000350 (0.0122)	0.0245 (0.0253)	0.0110 (0.0207)	(omitted)	(omitted)
Father's occupation x Cohort 2	0.00808 (0.0124)	0.0483** (0.0234)	0.0224 (0.0201)	-0.0027 (0.0182)	-0.0339 (0.0493)
Father's occupation x Cohort 3	0.0200 (0.0153)	0.0590** (0.0240)	0.0126 (0.0218)	0.00469 (0.0173)	0.00585 (0.0418)
Father's occupation x Cohort 4 (only Mexico)	---	---	---	-0.00386 (0.0156)	0.00128 (0.0358)

Constant	-1.330***	-1.882**	-4.148***	-1.112**	-5.286***
	(0.367)	(0.747)	(0.708)	(0.479)	(1.288)
Observations	1,953	1,953	1,953	3,031	3,031

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

Figures 5-6 and 5-7 show the predicted probabilities for Chile and Mexico. In the case of Chile, results resemble heavily those found for placement transition 2. On the one hand, we find a moderate decline in the probability of dropping out across cohorts. Interestingly, in this third transition the decline in the probability of dropping out includes not only low and middle SES (groups 1 to 6), but also elite SES groups (groups 7 and 9), who start to period with dropout chances of about 20%. Not until the younger cohort do we find that the Chilean elite groups reach a point of complete saturation (i.e. dropout probability of 10% or lower) that, by necessity, should lead to equalization in later cohorts (not included in the sample) if the middle and lower SES groups keep expanding their access. Thus, vertical equalization of educational opportunity at the level of high school graduation in Chile was, for the period under study, an ongoing but still incomplete process, as the probability of dropping out without completing high school for low SES groups ranged between 30 to 40%, depending on the pathway, in the younger cohort. On the other hand, the pattern of pathway rigidity is found here once again. In middle and elite socioeconomic groups who attended public and private schools at the primary level (groups 4, 5, 7 and 8), we find that pathway rigidity starts in the older cohort, before any decline in inequalities of access, thus defying the EMI-sector hypothesis. In the groups who attended private-subsidized school in primary (groups 3, 6 and 9), we find a progressive increase in pathway rigidity across cohorts, providing support to the EMI-sector hypothesis.

In Mexico, on the contrary, there is no decline in the chances of dropping out at the level of high school completion, as shown in Figure 5-7. Among those attending public schools in primary (groups 1, 3 and 5), the chances of dropping out remain almost the same across the whole period. Persistently higher dropout chances for lower socioeconomic groups (of about 70% for

group 1, about 50% for group 3, and about 20% for group 5) show the continuous vertical stratification in the completion of high school in Mexico. In terms of horizontal stratification, pathway effects remain strong at this transition, as those attending primary school in the public or private sector show considerable higher chances of attending the same sector by the end of high school. The propensity to persist in the same school sector, then, exists not only for the shorter primary-lower secondary pathway, but also for the longer primary-high school pathway. As in Chile, pathway effects increase with socioeconomic status: school sector closure is even stronger for the elite than for middle or low socioeconomic groups. Furthermore, for those attending private school, pathway closure increases for the elite (higher probabilities for attending private school between cohorts 1 to 3 in group 6), and it declines for middle and lower SES groups (lower probabilities of attending private school between cohorts 2 and 4 for groups 4 and 2). Combined, these trends suggest intensification across cohorts of school sector stratification at this transition.

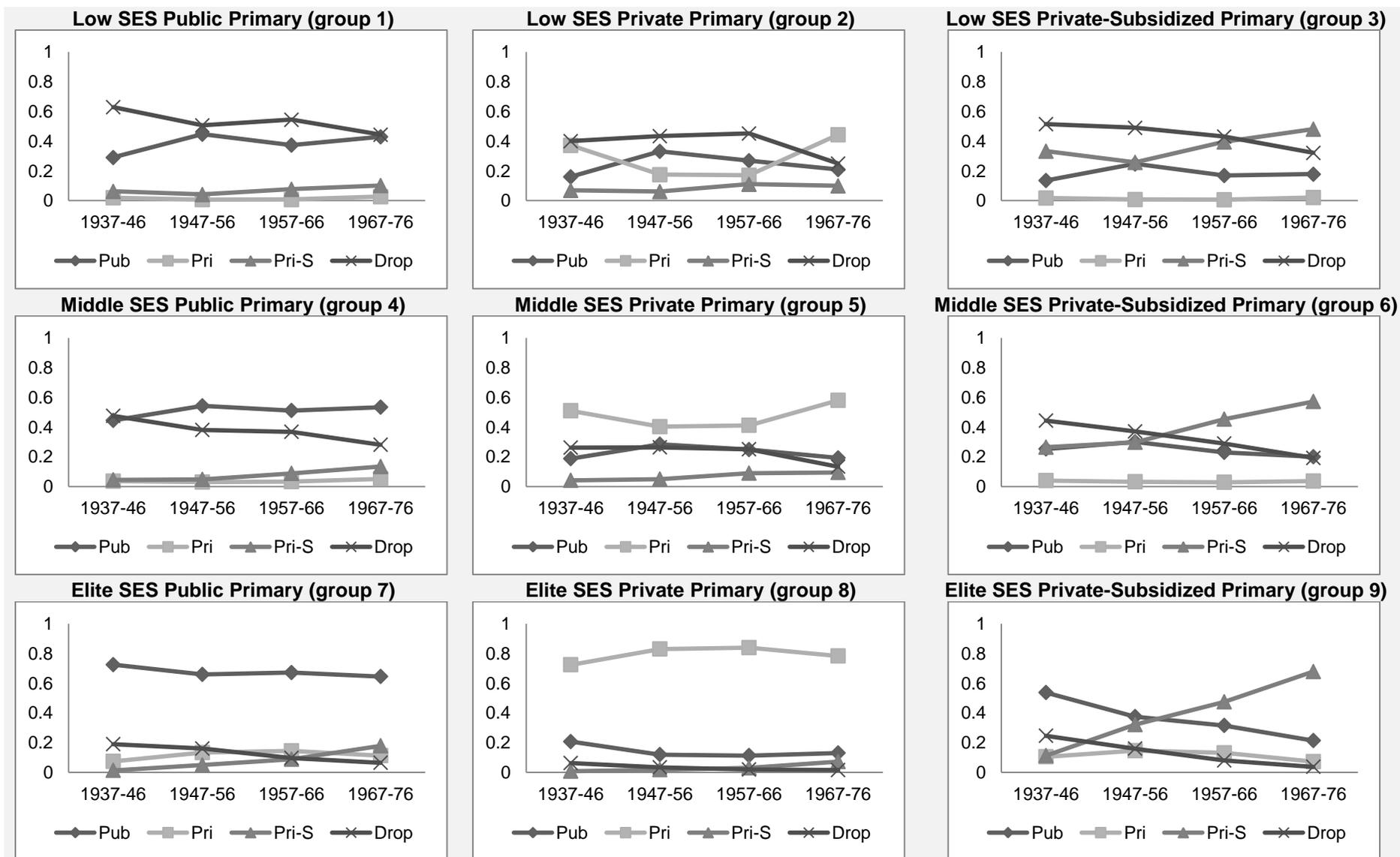


Figure 5-6. Predicted Probabilities by Socioeconomic Background and School Sector in Primary for Placement Transition 3: Completing High School. Chile

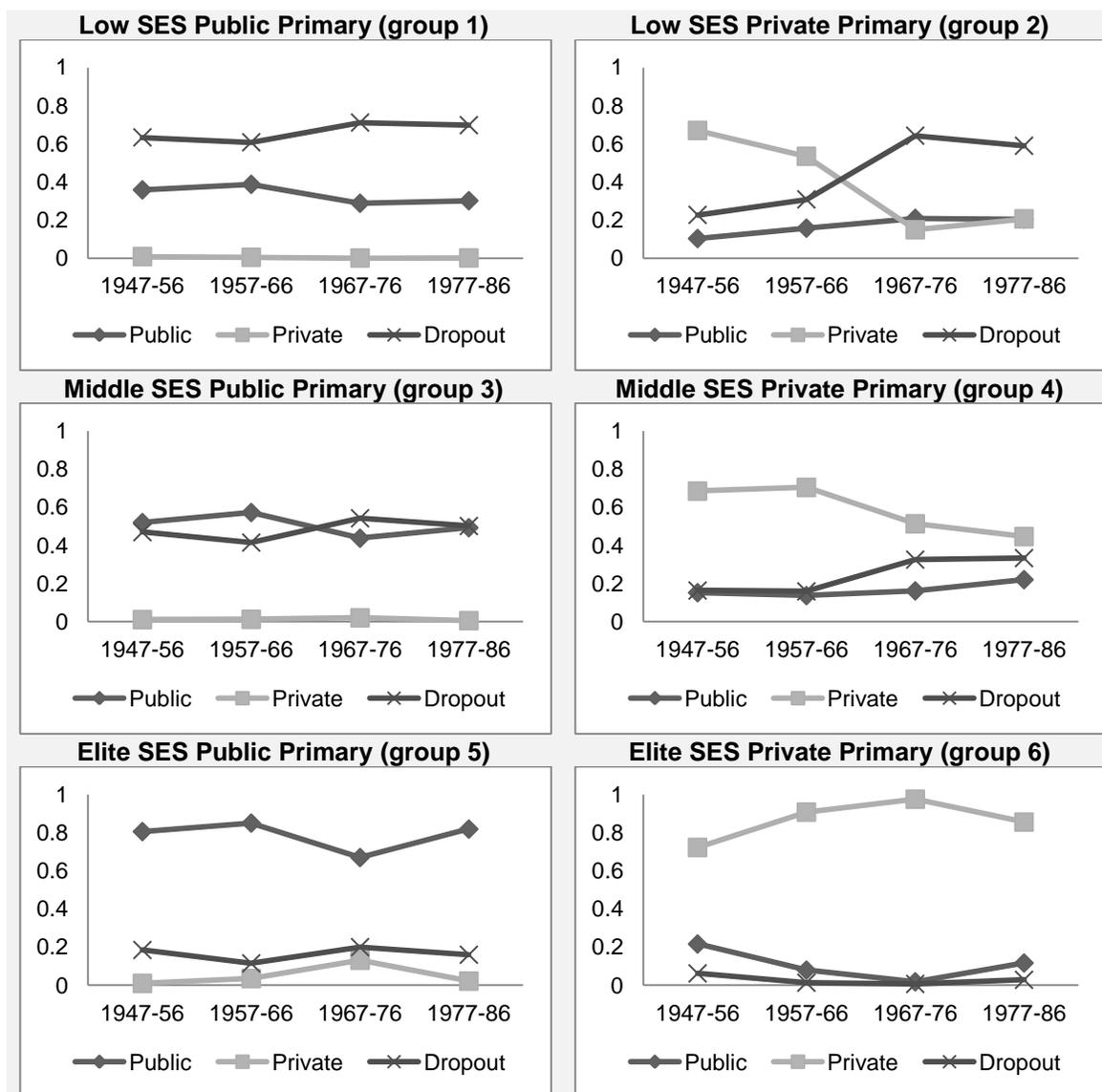


Figure 5-7. Predicted Probabilities by Socioeconomic Background and School Sector in Primary for Placement Transition 3: Completing High School. Mexico

Summary and Discussion

Table 5-5 provides a summary of the results presented in this chapter. Overall, the findings demonstrate that school sector has a prominent role in educational stratification in Chile and Mexico. For each of the transitions under study, the probabilities of attending a private school

increase with socioeconomic background. In Chile, a strong pattern of school sector stratification is clear as early as primary school, whereas in Mexico it becomes evident at the lower and higher secondary levels. Results show that in Chile and in Mexico sector placement in primary school is a strong predictor of continuation and sector placement at higher levels. “Pathway closure” of the elite around private high schools was strong for the entire period under study in Chile and in Mexico. In Chile, the private-subsidized sector has been the source of increasing stratification across sectors over time, reducing the chances that students from elite and middle SES background buy-in to the public sector. Results also suggest a decline (moderate at higher levels) in vertical stratification in Chile and Mexico, as the probability of dropping out for low and middle SES groups has systematically declined over time.

These findings will make at least three important contributions to the literature on educational stratification. First, by examining school sector stratification at three different points in the school trajectory, including primary school, I was able to show that the horizontal stratification patterns vary across levels. Findings reveal that early school sector placement is tremendously significant for the rest of the educational trajectory. Students attending private schools in primary have lower chances of dropping out at later transitions, and also tend to be placed in private schools when they attend higher levels. There is a clear accumulation of advantage in these pathways closures through which the elite in particular makes its way through the school system. This advantage might be considered as a relevant dimension for future studies. Existing literature on horizontal stratification and the EMI hypothesis in particular have excluded primary schooling from consideration by narrowly focusing on curricular tracking. My results demonstrate the importance of expanding our conceptualization of horizontal inequalities of opportunity to account for the fact that differences in kinds of schooling cement into place at the very early educational stages.

These findings also introduce new elements to our understanding of the relationship between vertical and horizontal forms of educational stratification. A basic question in the literature has been whether vertical and horizontal stratification relate to one another in terms of “replacement” or “reinforcement”. My analysis provides a mixed answer. The historically persistent pattern of elite closure around private high schools in Chile and Mexico and also around private primary schools in Chile suggest that for the very wealthy Latin American families, private schools add an additional qualitative layer of privilege that reinforces the advantages in amount of schooling enjoyed by their offspring. On the other hand, a pattern of replacement is discernable among the Chilean middle class, which has grown more likely to attend the private-subsidized sector at the same time that vertical inequalities decline as a result of expansion. In other words, we might generalize these findings by suggesting the hypothesis (for further research) that in the highly unequal Latin American context, the elite historically reinforced the educational advantage of their offspring by relying on vertical and horizontal forms of differentiation at the same time, whereas the middle classes relied only on vertical differences relative to the poor – unless national policies, like the voucher reform introduced in Chile, created contexts of enhanced school choice (e.g. cheaper private schools), the opportunities of which tend to be capitalized by the middle class rather than the poor.

Finally, the contribution of this chapter to the literature is also methodological. Using a multinomial logistic approach and *placement transitions* as a measure of educational attainment conveys in a more complete way than the traditional binary transition model the processes that link continuation, placements and pathways into a dynamic structure of educational opportunity.

Table 5-5. Summary of Results: Vertical and Horizontal Stratification of Placement Transitions PT1 (Completing Primary), PT2 (Grade 9) and PT3 (Completing High School) in Chile and Mexico

Dimension of Educational Stratification		Chile	Mexico
PT1	Vertical	Equalization: Low and Middle SES into public school	Equalization: Low and Middle SES into public school
	Horizontal	Inequality increase: Elite into private and private-sub Middle into private-subsidized	No observable differences: All SES groups more likely to attend public school
PT2	Vertical	Equalization (moderate): Low and Middle into pathway school	Equalization (moderate): Low and Middle into pathway school
	Horizontal	Persistent Inequality: Elite closure in private school Inequality increase: Middle into private school Middle and Elite into private-subsidized	Persistent inequality: Elite closure in private sector
PT3	Vertical	Equalization (moderate): Low and Middle into pathway school	Persistent Inequality
	Horizontal	Persistent Inequality: private sector Inequality increase: private-sub sector	Growing: elite into private

Chapter 6

School Sector and Social Stratification

This chapter presents the analysis conducted to address Research Question 2, referred to the role of school sector in the intergenerational stratification process. To address this question, I use a linear regression approach to study the association between private school attendance at different levels of the school trajectory and adult occupational attainment. My analysis has three main foci. First, I analyze to what extent school sector mediates the direct effects of the essential or basic predictors used to model the social stratification process, i.e. father's occupation, parental education and years of schooling. Second, I analyze the size and significance of the direct effects of attending a private school, after holding other factors constant. Finally, I introduce an interaction between years of schooling and school sector to analyze whether the occupational returns of each additional year of schooling differ between public and private students, holding family background constant. Although I do not focus on changes over time, I include a final, exploratory analysis of how the predicted occupational attainment scores vary across birth cohorts for the individuals who completed their full educational trajectory (i.e. primary to high school) in public, private or private-subsidized schools.

The chapter contains three sections: the first section reports the descriptive results, the second presents the linear regression and predicted occupational scores analyses, and the third provides a summary and discussion of the findings. In a nutshell, the results suggest that school sector differences have a relevant role in adult socioeconomic attainment. Measures of private school attendance have a significant direct and interaction effect on occupational scores; in Chile the effect is larger for those attending private schools at the primary level, whereas in Mexico is

larger for private high schools. In terms of trends across cohorts, I find that in Chile the occupational gap between students from different school sectors has increased over time, whereas in Mexico it has remained stable. These results support the importance of considering qualitative educational differences, including those existing at lower levels of the school system, in studies looking at adult socioeconomic attainment.

Descriptive Statistics

Table 6-1 presents descriptive statistics for the variables used in the linear regression analysis. The sample includes only cases with no missing values on the dependent or independent variable. The outcome variable, Occupational Attainment, is the score of the respondent in the International Socio-Economic Index, standardized to have a mean of zero and standard deviation of 1. In this standardized outcome variable, each occupational value indicates its difference from the mean (of the original variable) in number of standard deviations (of the original variable). For example, a standardized occupational score of 1 indicates that the respondent's original occupational score is one standard deviation above the mean (e.g. in Chile, that would represent a ISEI score of 48), while a regression coefficient of -0.5 indicates that a unit change in the predictor is associated with a decline of half a standard deviation (e.g. in Mexico, that would be a negative effect of 7 points in the ISEI scale). Standardizing the dependent variable allows me to have a common scale to compare and interpret the effect of the predictors in terms of relative occupational positions within each country.

Independent variables include respondent's years of schooling, parental education, father's occupation and –my predictors of interest– dummy variables for respondent's attending private or private-subsidized schools in primary, lower secondary and high school. In each educational level, individuals were given a value of 1 if they attended a private school and

assigned a value of 0 otherwise. Differences in the amount of schooling among students of different sectors, and among individuals who did and did not attend school, are controlled for through the years of education covariate.

To be sure, there is a long list of additional variables, not included here, that might affect occupational attainment, such as gender, indigenous background, or family expectations, as shown by the endless extensions and variations to the basic social stratification model that can be found in the literature (Blau and Duncan 1967; Sewell, Haller, and Portes 1969; Lin, Vaughn, and Ensel 1981; Puga and Solís 2010). I do not consider those additional variables because my purpose here is not to find an exhaustive status attainment model, but to provide new insight on a particular issue, namely the ways in which school sector mediates and interacts with the essential components of the stratification process.

Table 6-1. Descriptive Statistics: Proportions and Means—Chile and Mexico

	Chile		Mexico	
Occupational Attainment ^a	32.8	(14.9)	31	(12.3)
Respondent's Years of Schooling	9.7	(4.1)	9.1	(3.9)
Parental Education ^b	6	(4.9)	4.9	(4.3)
Father's Occupation ^c	32.8	(14.9)	31	(12.3)
School Sector				
Primary: private	9.2		2.3	
Primary: private-subsidized	8.8		—	
Lower secondary: private (only Mexico)	—		2.2	
High school: private	10.4		2.6	
High school: private-subsidized (only Chile)	8.3		—	
<i>N</i>	2,999		3,816	

Notes: Standard Deviations in Parentheses. Sample includes males aged 25-64 born between 1937-1976 in Chile or between 1947-1986 in Mexico. a) ISEI score. In the regression models this variable is rescaled to have a mean of zero (0) and a standard deviation of one (1). b) Years of schooling completed. d) ISEI score (not standardized).

Table 6-2 reports standardized occupational scores by highest educational level and school sector of respondents in Chile and Mexico. On the vertical education dimension, results show that individuals with more education have, on average, higher occupational attainment than their less educated peers. The occupational disadvantage of having no schooling is relatively

larger in Chile (0.88 standard deviations below the mean of the Chilean sample) than in Mexico (0.47 standard deviations below the mean of the Mexican sample), perhaps related to the higher proportion of unschooled individuals in Mexico. On the other end of the educational distribution, the occupational advantage of college education is larger in Mexico than in Chile (1.5 and 1.2 respectively), perhaps related to the larger rates of access to higher education in Chile. A noticeable difference between both countries is that in Chile individuals with high school as their highest educational attainment have occupational scores below the population average regardless of the school sector they attended, whereas in Mexico high school degree holders are still slightly above the average in terms of their occupational scores. As the rates of enrollment in higher education keep expanding in Mexico, it is likely that the relative advantages of a high school diploma will decline.

In terms of horizontal differences within levels, Table 6-2 shows that those attending private schools have, on average, higher occupational attainment than those who attended public schools. In Chile, the occupational disadvantage of having attained only primary school or only high school is larger for students in the public sector (primary public, -0.63; high school public, -0.14) than for those in the private sector (primary private, -0.59; high school private, -0.07). In Mexico, among those who have lower secondary as their highest educational level, school sector makes the difference of being above the mean (private students, 0.3) or below the mean (public, -0.22).

Table 6-2. Mean Standardized ISEI scores by Highest Education Level Attained and School Sector: Chile and Mexico

	Chile	Mexico
No Schooling	-0.88	-0.47
Primary		
Public	-0.63	-0.42
Private	-0.59	-0.67
Private-Subsidized (only Chile)	-0.59	----
Lower Secondary (only Mexico)		
Public	----	-0.22
Private	----	0.3
High School		
Public	-0.14	0.09
Private	-0.07	0.49
Private-Subsidized (only Chile)	-0.04	----
College	1.2	1.5

Multivariate Analysis

Effects of School Sector on Occupational Attainment

In Table 6-3 (below) I present three models predicting adult socioeconomic destination for Chilean and Mexican adults. Model (1) includes only the essential or *basic predictors* of the social stratification model: parental education, father's occupation and respondent's years of education. In both Chile and Mexico, these basic predictors have a positive and significant effect, with the exception of parental education in Mexico, whose effect is channeled mostly through respondent's years of schooling. The coefficients for respondent's educational attainment are larger than those for parental education and father's occupation. In Chile and Mexico, one additional year of education is associated with an increase of 0.1 standard deviations in the ISEI occupational scores used to measure adult socioeconomic destination, holding socioeconomic background constant.

Table 6-3: Linear Regression predicting Occupational Attainment (standardized ISEI scores) – Chile and Mexico

VARIABLES	Chile			Mexico		
	(1)	(2)	(3)	(1)	(2)	(3)
Parental education ^a	0.0224*** (0.00436)	0.0184*** (0.00428)	0.0163*** (0.00423)	0.00526 (0.00396)	0.00392 (0.00395)	0.00391 (0.00395)
Father's occupation ^b	0.0120*** (0.00144)	0.0106*** (0.00143)	0.00964*** (0.00141)	0.0113*** (0.00126)	0.0103*** (0.00127)	0.0101*** (0.00127)
Education ^a	0.123*** (0.00496)	0.118*** (0.00523)	0.105*** (0.00526)	0.114*** (0.00419)	0.111*** (0.00421)	0.110*** (0.00422)
<i>School Sector Primary</i>						
Public ^c		(omitted)	(omitted)		(omitted)	(omitted)
Private		0.374*** (0.0728)	-0.340* (0.188)		-0.0405 (0.119)	-0.166 (0.273)
Private-Subsidized (only Chile)		0.0748 (0.0663)	-0.274 (0.188)		—	—
<i>School Sector Lower Secondary (only Mexico)</i>						
Public ^d		—	—		(omitted)	(omitted)
Private		—	—		0.298** (0.132)	-0.0764 (0.513)
<i>School Sector High School</i>						
Public ^e		(omitted)	(omitted)		(omitted)	(omitted)
Private		0.0868 (0.0768)	-1.498*** (0.268)		0.331*** (0.116)	-1.761** (0.822)
Private-Subsidized (only Chile)		0.0215 (0.0587)	-1.561*** (0.274)		—	—
<i>Interaction terms</i>						
Education × Public Primary			(omitted)			(omitted)
Education × Private Primary			0.0538*** (0.0163)			0.00858 (0.0246)
Education × Private-Subsidized Primary (only Chile)			0.0301* (0.0178)			—
Education × Public Lower Secondary (only Mexico)			—			(omitted)
Education × Private Lower Secondary (only Mexico)			—			0.0246 (0.0405)
Education × Public High School			(omitted)			(omitted)
Education × Private High School			0.118*** (0.0217)			0.143** (0.0579)
Education × Private-Subsidized High School (only Chile)			0.132*** (0.0230)			—
Constant	-1.747*** (0.0431)	-1.680*** (0.0441)	-1.520*** (0.0454)	-1.405*** (0.0450)	-1.355*** (0.0458)	-1.342*** (0.0460)
Observations	2,999	2,999	2,999	3,816	3,816	3,816
R-squared	0.425	0.437	0.461	0.268	0.273	0.275

Notes: Robust standard errors in parentheses. a) Years of schooling. b) ISEI score. c) Includes respondents with no schooling. d) Includes respondents with less than no lower secondary. e) Includes respondents with less than high school. *** p<0.01, ** p<0.05, * p<0.1.

Model (2) expands the basic stratification model through the inclusion of dummy variables for private school attendance at the primary, lower secondary (only Mexico) and high school level. In Chile, dummies have a third value for private-subsidized schools. Results of Model (2) for both Chile and Mexico show that the size, sign and significance of the basic predictors does not change much after we introduce dummies for private school attendance. However, the dummy variables for private schooling have a statistically significant direct effect of their own on occupational attainment, net of other factors. In Chile, attending a private school at the primary level has a very large and significant effect on adult occupation (0.374); in Mexico, attending private schools at the two higher levels (0.298 for lower secondary and .0331 for high school) has a significantly larger effect than attending a private school in primary (0.119, not significant).

Model (3) includes interaction terms between years of schooling and the private school dummies. This final model allows us to observe whether the effects of years of schooling vary depending on the school sector attended. As in Model (2), results for Model (3) show that the coefficients for variables indexing social origins (i.e. parental education and father's occupation) and the education coefficient do not change dramatically after the inclusion of interaction terms between education and private schooling. Moreover, the interactions are themselves significant. In Chile's Model (3), all interaction terms, for private and private-subsidized and for primary and high school, are positive and statistically significant. In Mexico's Model (3), only the interaction at the high school level is significant. The interactions terms change the meaning of the direct coefficients. For example, the education coefficient in Model (3) now refers not to the full sample but only to years of schooling completed by students in the public sector. The dummies for private schooling change their sign, from positive to negative. To better understand what the

result of Model (3) are saying, I will support the interpretation of the coefficients with figures depicting the interaction between years of schooling and school sector at each level.

Figures 6-1 and 6-2 represent the slope for years of education for individuals who attended public, private and private-subsidized schools at the primary and high school level, respectively, as predicted by Model (3). Overall, they show that the education slope is steeper for individuals who attended private schools and private-subsidized schools; comparatively, the education slope for public students is flatter. After high school, each additional year of schooling for those who attended the private sector adds up to a clear and considerable gap in occupational attainment.

Figure 6-1 shows the difference between the group of public school students and the group who attended a private school at the primary level. The solid black line is the education slope for individuals attending public primary schools. The specific values of these slopes are indicated by the education coefficients in Model (3). In Chile the public school slope has a value of 0.105 and in Mexico a value of 0.110. The interaction terms in Model (3) indicate the specific difference between the public school slope and the slope for private and private-subsidized schools. In Chile, the interaction terms “Education \times Private Primary” and “Education \times Private-Subsidized Primary” are both positive and significant (0.0538 and 0.0301 respectively), signifying that the slope is steeper for private schools. The specific values of interaction coefficients indicate, as it is clearly represented in Figure 6-1, that the slope for the private-subsidized group is flatter than that of the private school group, but steeper than that of the public school group. In Mexico, although the difference in the slopes of each sector appears clear in the figure, it is not statistically significant at the 0.05 level.

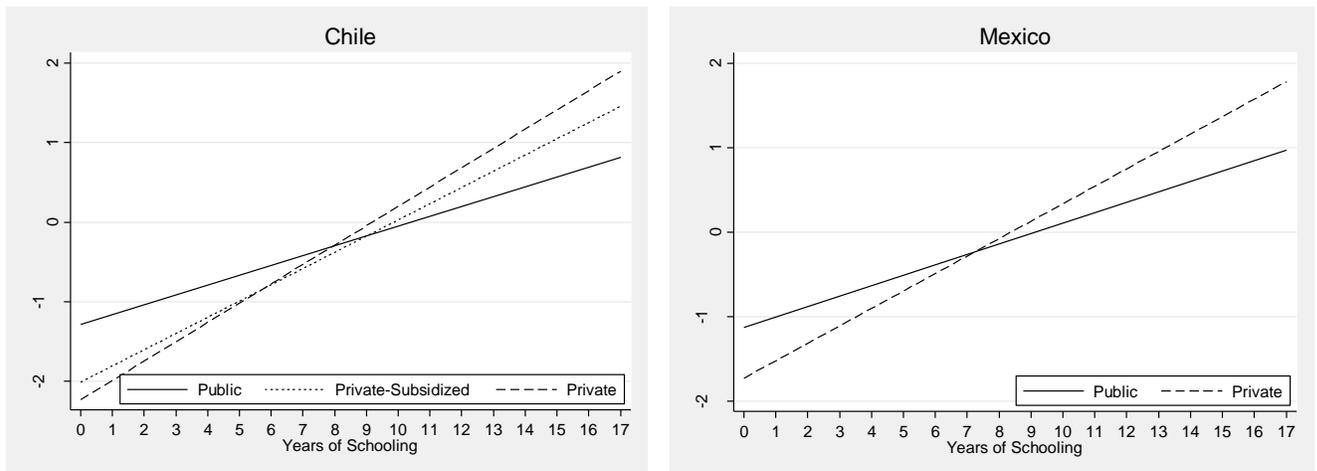


Figure 6-1: Effects of Years of Education on SES Destination by Primary School Sector – Chile and Mexico

At the high school level, the direct effects of school sector and the interaction between sector and years of schooling is significant in Chile and Mexico. Figure 6-2 represents the predicted slopes for public high school and private high school students in each country. In Chile, the difference between the public high school slope and the private and private-subsidized high school slopes is 0.118 and 0.132 respectively, as shown by the “Education \times Private High School” and “Education \times Private-Subsidized High School” coefficients in Model (3). Interestingly, in Mexico the difference in the slopes, which in the previous levels was not significant, becomes highly significant at the high school level: the “Education \times Private High School” for Mexico is 0.143, indicating that for private school students the education slope is steeper than for public school students.

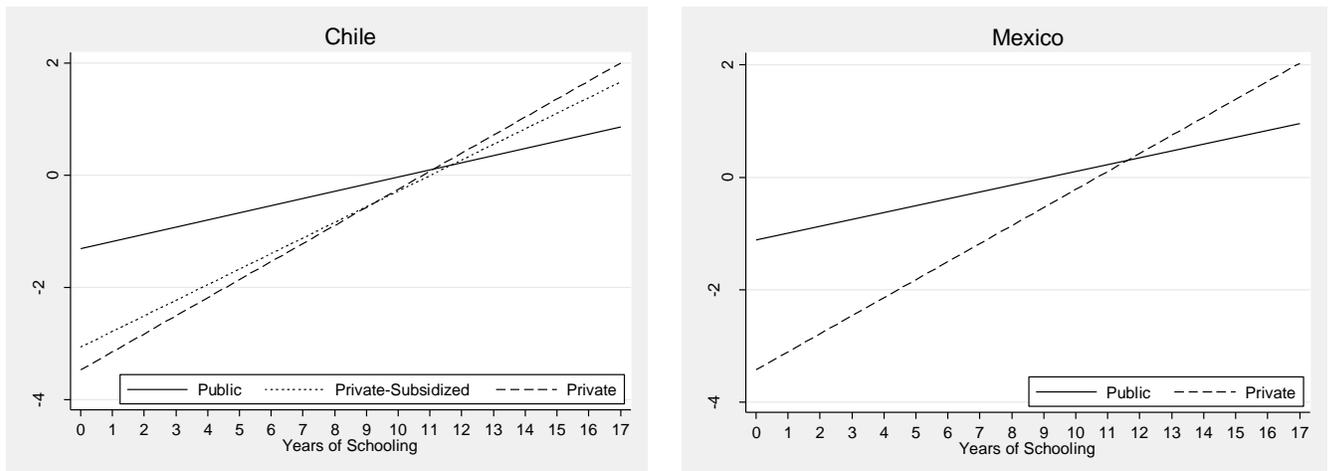


Figure 6-2. Effects of Years of Education on SES Destination by High School Sector – Chile and Mexico

It is important to note that the benefits of attending a private school, according to these results, appear only after a number of years of schooling have been completed. In Table 6-3, we find that model (3) shows negative coefficients for dummy variables, but positive interactions between years of schooling and private attendance. Figure 6-1 shows that private primary schools become an advantage only after 8 years of schooling in Chile and after 7 years of schooling in Mexico. Figure 6-2 shows that attending a private high school starts paying off only after high school is complete (after 12 years of schooling). These results suggest that the returns to investments in private schooling are conditional on staying in school a substantial amount of years. They suggest that private school credentials (not just attending but graduating) are an important mechanism to understand private school effects. Indeed, those attending primary or high school in the private sector that do not complete those levels have *lower* predicted occupational scores than students in the public sector.

Changes over time

The focus of Research Question 2 and this chapter is to identify the basic patterns of association between school sector and adult socioeconomic destination. For this purpose I explored direct and interaction effects of school sector using linear regression analysis. Yet the final Model (3) above can also be used to inform changes over time, which is the main focus of Research Question 1. For this purpose, I conducted an exploratory analysis of how predicted occupational scores (the standardized ISEI) vary across birth cohorts for sampled individuals who completed their full school trajectory in public, private or private-subsidized schools. The analysis is conducted in two steps. First, based on the regression results reported on Model (3), I predicted occupational scores for both each observation in the Chilean ($n=2,999$) and Mexican ($n=3,816$) samples using the *predict* Stata command. Then, I plotted the predicted scores by birth cohort for three types of students: public school students (who completed placement transitions 1, 2 and 3 in a public school), private school students (who completed the three transitions in a private school), and finally, in the case of Chile, private-voucher students. The strong pathway effects found in the multinomial logistic regression suggest that it makes sense to focus on individuals who completed each transition in the same school sector. Also, by considering only students who graduated from high school, I aim to capture the cumulative effects of completing a full school trajectory in each school sector on occupational attainment.

Figure 6- 4 shows the predicted occupational scores by school sector and birth cohort. In both countries, the predicted adult occupation of students who completed each one the three placement transitions in public schools is, on average, about 0.5 standard deviations above the mean of the full sample (which includes those dropping out before completing those transitions), but it is also about 1 standard deviation below the predicted outcomes for private students, who are about 1.5 standard deviations above the mean. Private-subsidized students have a position in

between, closer to the public than to the private students. These findings indicate a large and historically persistent public-private school gap in occupational attainment. In terms of trends over time, in Chile (Figure 6-4a) there is moderate but consistent decline in the occupational attainment of public students (from 0.4 to 0.3 standard deviations), and an increase for those completing primary and secondary schooling in the private sector. The increase in predicted occupational scores among private school students is particularly strong in the younger cohort. These trends combined point towards a growing gap in occupational attainment between Chilean students completing high school in the public and the private sector. In Mexico (Figure 6-4b), despite ups and downs among private student group, the gap remains relatively stable across over time.

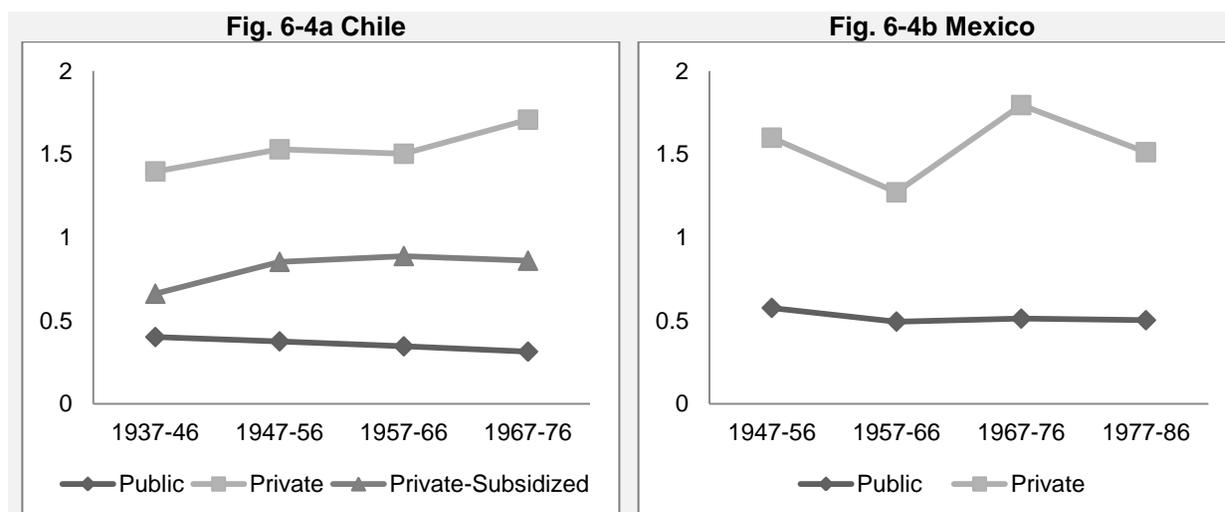


Figure 6-4: Predicted Occupational Destination by School Sector Profile and Birth Cohort – Chile and Mexico

Summary and Discussion

The results reported in this chapter demonstrate that school sector differences have a relevant role in adult socioeconomic attainment in Chile and Mexico. The analysis reveals two basic pathways for these effects. On the one hand, Model (2) results show that measures of private school attendance have a statistically significant *direct effect* on occupational scores, net of family background and years of schooling. In Chile the direct private school effect is larger at the primary school level, whereas in Mexico the effect is larger at the lower secondary and high school levels. On the other hand, Model (3) shows a significant *interaction effect* in that attending a private school (at any level in Chile and at higher levels in Mexico) increases the occupational returns of each additional year of schooling. By the time students attain more than 12 years of education, the occupational gap between public and private students is substantial. This occupational gap has increased across cohorts in Chile, whereas in Mexico it has remained stable.

These results are important for the stratification literature on Latin America, which so far has neglected school sector as a relevant dimension of study to understand adult occupational

destinations in the region. More generally, these results support the importance of considering horizontal educational differences, including those existing at lower levels of the school system, in studies looking at adult socioeconomic attainment. They also open up important questions as to what the specific mechanisms through which private schooling affects occupational attainment are. A plausible theory is that private schools provide additional educational resources to their students, compared to public schools. However, most studies of student achievement strongly suggest that performance differences across school sectors are not significant after controlling for socioeconomic background of the students (Somers, McEwan, and Willms 2004; Bellei 2008). An alternative explanation is that private schools provide students with a set of non-educational resources, such as social capital and cultural capital, which can be actualized in the future when they enter the labor market. It is also possible that private schooling effects are capturing dimensions of socioeconomic inequality not measured by the measures of family background that I include in this study, for example wealth, marriage or neighborhoods. Building upon the initial findings of this study, it will be the job of future research to unfold the mechanisms of private school effects and to engage more explicitly with issues of unobserved selectivity.

Chapter 7

Discussion

This research project is a comprehensive investigation of school sector stratification in Chile and Mexico, its variation across educational levels and over time, and its consequences in adult socioeconomic stratification. My purpose is twofold. First, I set out to contribute to the research literature on education and inequality in Latin America by asking why school sector stratification is so prominent in Latin America and what factors explain cross-national variation within the region. Based on my historical and policy analysis of educational expansion and school sector differentiation in Latin America and in my two national cases, I advance a series of hypotheses on institutional, organizational and individual level processes that account for commonalities and differences in the empirical findings between Chile and Mexico. Second, I aim at contributing to social science literature on educational stratification, in particular by discussing and expanding hypotheses regarding “vertical” and “horizontal” forms of educational stratification. My study expands the focus and scope of previous research on this topic in four ways: it looks at school sector as a form of horizontal stratification, accounting for internal differentiation in the private school sector -- particularly between private and private-subsidized schools in Chile -- which introduce a novel middle-class stratification pattern; it looks at whether horizontal stratification exists at earlier educational levels than previously considered, particularly in primary schools; it looks at the relationship between vertical and horizontal forms of educational stratification considering not only the possibility of “replacement” but also of “reinforcement”; and it considers the consequences of horizontal stratification not only on further educational outcomes but also on adult occupational attainment.

Contributions to the literature on inequality in Latin America

Why is school sector stratification so prominent in Latin America? What are the sources of variation in school sector stratification within countries of the region? I answer these questions in the form of a historical narrative organized around analytical hypothesis about the factors leading to educational expansion and school sector differentiation (based on the review of the literature included in Chapter 2 and Chapter 3) and contemporary patterns of educational stratification (based on the empirical findings reported on Chapter 5 and Chapter 6).

Institutional origins of education in Latin America

The historical emergence and international diffusion of mass schooling as the prevailing institutional model of modern education among Western nations during the mid-18th and 19th centuries created the political conditions (i.e. legitimacy) for organizational growth and internal differentiation of school systems around the developing world. Since their independence in the early 19th century, Latin American nations embraced mass schooling and its basic institutional blueprints, yet actual implementation of national school-systems able to provide universal education was limited by weak State-capacity (i.e. resource scarcity, political instability). Thus, in Latin America as elsewhere in the Global South, educational structures emerged out the adaptation of general blueprints to local conditions. Following the educational developments in Europe and the United States, the early intellectual and political elites of Latin America advocated in favor of public education, providing a rationale that was very similar to that found in the North -- that is, positing that education would serve as a device for the spread of literacy, science and modern cultural values, and thus would create the moral citizens and skilled workers required for democracy and economic progress. The large *mestizo* and indigenous populations

were the main targets of the schooling process in Latin America; on the side of the social hierarchy, the Latin American elites who were, for the most part, descendants of Spanish whites who explicitly identified themselves with Europe, redefined the cultural mission of public schooling, as the Argentinean writer and politician Faustino Sarmiento famously put it, as one of taking the *mestizo* and indigenous populations away from their “*barbarie*” (i.e. the “barbarism” of their ancient and new syncretic religious beliefs and cultural life-worlds) and bringing them to the “*civilización*” (e.g. Western civilization and rationalism). The “*Estado Docente*” (i.e. State-as-teacher) was a common name or motto used to describe the educational role of the State; simultaneously, however, the great majority of illiterates were excluded from political participation (e.g. denied suffrage) in many countries, and for the most part the children of elites continued to receive their education through private tutors and independent private schools, as in colonial times, separate from the masses of the population. The stark gulf between the power and living conditions of the elite and the rest of the population manifested in several ways, most prominently with property and management of land (e.g. the hacienda system) and of natural resources (e.g. mining companies). This historical inequity and economic predation can be seen as the direct origins of current extreme income inequality and “asymmetrical” social structures that characterizes contemporary Latin America. Therefore, mass schooling developed in this context, reflecting the region’s long history of unequal economic structures and particular regional conditions.

The organization of school systems: national trajectories

Despite sharing their origin in a common regional experience that was itself embedded in a global institutional process, national school systems within the region followed quite distinct

trajectories of growth and internal differentiation as a result of political, economic and cultural factors at the national level.

Regarding the organizational growth, national State-capacity for educational implementation, as mentioned before, was a major factor. In Mexico, political instability resulting from infighting between regional leaders remained constant during the entire 19th century, until the Mexican Revolution finally brought about a long period of political stability. When a centralized public agency with the mission of expanding education was created in 1921, it still had to work under economic constraints and challenges of a large and extremely dispersed diverse population with varied leadership. Universal primary was achieved in Mexico only towards the end of the 20th century. In Chile, earlier consolidation of State-organization and a much smaller and concentrated population allowed a faster pace of expansion of primary schooling, which was achieved by the 1960s.

Regarding school-system internal differentiation, a key historical factor was the influence of the Catholic Church, which was in charge of education during the colony and had to fight the secularizing tendencies of the post-independence political elites seeking autonomy from the Spanish Crown. In many Latin American countries, including Chile, the Church retained a significant political influence and managed to receive public subsidies for their schools, leading to a “mixed-provision” school system that over time further legitimized the role of private agents as education providers. In countries like Mexico and Argentina, religious schools faced strict restrictions and received no public subsidies of any kind, leading to school systems entirely controlled by the State. In Mexico, this led at times to dramatic social conflicts between the secularizing political elites and a large part of the population that was fervently religious. An example of this is the so-called “Guerra Cristera” of the 1920s. Throughout the rest of the 20th century, religious and private schools were tolerated in practice, yet not officially authorized or supported. Catholic religiosity of the masses and the elite in Mexico and Chile created demand

for Catholic schools, yet social segregation persisted, and Catholic schools were themselves differentiated by those maintained through tuition fees and those free sustained through philanthropic donations. Overall, these differences in the level of political influence of the Church on national education policy during the 19th and early 20th century are a key factor that explains the historically higher levels of private school enrollment in Chile than in Mexico.

The extent of the penetration of the neoliberal doctrine into the realms of social and education policies during the 1980s and 1990s is another factor that introduced variation between these countries' school systems. In Chile, the organization and funding of the school system was completely reformed to reflect the tenets of Chicago-school economic theories, which posited that competition between public and private schools for students and funding would improve educational outcomes. Reformers introduced universal school vouchers that unleashed an intense process of school privatization; for the most part, those leaving the public sector are members of the middle class that cannot afford the expensive tuition of traditional private schools but aim to differentiate themselves from the lower SES students that attend public schools. On the contrary, in Mexico, where the economy was also deeply transformed under neoliberal principles in the aftermath of the debt crisis of the 1980s, education policy nevertheless retained the statist approach that it maintained since its beginnings.

Effects of school system structures on individual opportunities: Chile and Mexico

The empirical analyses reported in Chapter 5 and 6 reveal the importance of school-system structures for the allocation of educational opportunities (their *amount* and *kind*). Regarding vertical inequalities, my findings for the most part confirm previous research in that I find that inequalities in the completion of primary education have significantly declined in Chile and Mexico; inequalities in the access to secondary education have also declined, if more

moderately, in Chile and Mexico; and inequalities in completion of high school have declined (moderately) in Chile and persisted in constant and substantial in Mexico for cohorts born since the 1950s.

Regarding horizontal stratification, I found that socioeconomic differences in the probability of attending public and private schools are substantial at all levels and have long term consequences on occupational attainment. In Chile early school stratification is particularly important: the association between an elite-SES background and private school enrollment is a statistically significant already in primary school, and it has been so for the last fifty years at least, which is the period for which I have data. School sector is a significant predictor of the probability of school continuation, and school sector placement at the entrance and completion of high school. There is a clear pattern of “pathway rigidity” that means that those attending private school in the primary level are much more likely to continue the rest of their educational trajectory in the private sector, and those attending public primary school are much more likely to continue in the public sector. Also, private school enrollment in primary is significantly associated with a higher occupational status in the future. In Mexico I find a similar pattern of occupationally consequential socioeconomic stratification between public and private schools, with the difference that in Mexico it becomes statistically significant only at the lower secondary and high school levels, not in primary school. An additional difference between Chile and Mexico occurs with regards to access to private schooling among middle SES groups. In Mexico the private sector is a social space restricted, for the most part, to the socioeconomic elite, whereas middle SES groups attend the public sector that is attended as well by the lower SES groups; this has been the dominant pattern for the whole fifty years period under my study. In Chile, however, middle-class access to private-subsidized schools has increased over time. Private schools funded (totally or partially) by the government through vouchers or other forms of public subsidies opened an opportunity for middle class families to leave the public system as a way to gain

differentiation from lower socioeconomic groups. Fully independent private schools remain, however, a constant privilege of the elite for the full period of study in Chile, suggesting a regional pattern of Latin American elites historically using private schooling as a device of educational advantage and/or social distinction and protection, even before the universalization of primary schooling took place.

In what follows, I discuss the implications and contributions of these findings to social science literature on educational stratification.

Contributions to the literature on educational stratification

How does educational inequality work in contexts of educational expansion? As I discuss in Chapter 2, the distinction between the “vertical” and the “horizontal” inequality of education opportunity is a recent development within the “education transitions approach” (ETA) to educational stratification that seeks to address this question. Mass schooling makes formal education increasingly available to all, regardless of social background, but quantitative and qualitative differences in schooling can persist. Researchers in the ETA tradition distinguish between “vertical” and “horizontal” stratification to analyze, respectively, differences in the *amount* and in the *kind* of education received by individuals from different socioeconomic groups. Within the ETA framework, the vertical dimension is measured as the odds of progressing through a sequence of binary and conditional school transitions. The horizontal dimension has been measured, for the most part, as the odds of being placed in different curricular tracks *within* or *between* secondary schools (Lucas 2001; Breen and Jonsson 2000) or, at the post-secondary level, in terms of college selectivity and academic field (major) (Gerber and Cheung 2008). A recent comparative study considered school sector as a dimension of horizontal differentiation at higher education levels (Shavit et al. 2007).

These are important research developments; however, they do not go far enough if we want to apply this framework to a wide array of international cases. Specifically, these research developments share at least three common limitations that I addressed in my study of school sector stratification in Chile and Mexico. First, these studies have not considered (theoretically or empirically) the diversity of organizational forms that can introduce horizontal differences in educational opportunity, such as private schooling or private tutoring. Second, these studies do not consider primary school as a unit of analysis to understand horizontal stratification. Third, previous research assumes that as vertical stratification decreases, horizontal stratification increases, yet the relationship between both can be more complex; particularly, vertical and horizontal forms of educational stratification can exist simultaneously, reinforcing one another instead of replacing each other. Fourth, previous research has asked how horizontal differences affect further educational outcomes (most often college entrance) but much less whether there are long-term direct and indirect effects on adult status attainment. My findings point toward the necessity of refining key elements and assumptions about vertical and horizontal educational stratification.

School sector as horizontal stratification and beyond

A basic limitation that previous studies have in common is their focus on a reduced set of forms of horizontal differentiation, most noticeably curricular tracking at the high school level and selectivity and major at the post-secondary levels. However, the educational choices that students and families face in order to secure educational advantages are much more diverse, especially when we consider this question from an international comparative perspective. In this study, I focused on private schooling as a form of horizontal stratification. By doing this, I built upon an argument introduced by two previous studies using the educational transitions

approaches that have studied school sector differences as a relevant dimension of education inequality in Latin America (Torche 2005a; Marteleto et al. 2012). The comparative literature on school choice also provides ample evidence that the difference between public and private schools is a relevant dimension of families' education decisions in many countries, and also that students' socioeconomic background matters deeply when answering the question of who benefits the most from expanded school choice (Forsey, Davies, and Walford 2008; Chakrabarti and Peterson 2008). Furthermore, based on research done on Canada (Davies 2004) and in Asian countries, I suggested that private tutoring, including the massive out-of-school private tutoring services also known as "shadow education" systems, can also be understood a device that differentiates the educational opportunities of students attending the same grade or level. For example, a student completing primary school might have the choice not only of continuing into high school or dropping out, but also and simultaneously of attending an academic or a vocational school, any of which could in turn be a public or a private school. This student might also want to attend private tutoring for hours after school as a strategy to enhance his or her achievement. It is likely that this complex set of educational choices becomes increasingly important as education expands.

The focus of previous research on curricular tracking is narrow; we need a broader definition of horizontal stratification that includes these diverse institutional structures, including private schooling and private tutoring, which have not been adequately considered by studies under the educational transitions approach. In this research project, I define horizontal stratification as *any kind of formal educational experience that occurs outside of the family and alters the distribution of educational opportunities among students attending the same grade or level*. This definition leads me towards an expanded typology of organizational forms of horizontal educational differentiation. This typology considers three basic forms of horizontal differentiation: *within schools*, *between schools*, and *outside-of-school*. Within schools includes

all forms of ability grouping among students of the same schools. Between schools includes placement of students into separate vocational and technical schools, separate public and private schools, and also into differentiated schools within public and private school sectors, such as segregated minority inner-city vs. white middle-class suburban public schools. Such segregation into differentiated schools can also include separation into private schools that are secular or religious or that receive or do not receive governmental subsidies (e.g. schools that are free of charge or expensive). Outside-of-school differentiation includes the diverse forms of private tutoring, including individual private tutors and the *cram* after-school institutes.

A typology of this kind might provide the basis for creating a future agenda of comparative-international research aimed at understanding how and why the organizational structures of horizontal stratification vary cross-nationally. Based on previous research, I would hypothesize that particular forms of horizontal differentiation tend to have a special role or importance in particular countries or regions, but not in others. For example, early curricular tracking between schools has been the signature form of horizontal stratification in Europe, especially in nations like Germany, Sweden or France. In the United States, with its comprehensive high school which offers different academic courses to different students according to their measured ability or choice, within school ability groups is an important form of horizontal stratification. In the United States public sector segregation managed by families through their residential decisions, is another salient form of horizontal stratification (Holme 2002). In several contexts, most noticeably in Asian countries like Japan or Korea, but also in Canada and others, private tutoring is an emerging trend of horizontal stratification. Finally, in Latin America school sector is the major source of horizontal stratification.

Going forward, this comparative research agenda would have to address the following three questions: Why are certain countries and regions more likely than others to adopt particular forms of horizontal stratification? What is the relationship between different forms of horizontal

stratification in different countries (e.g. school systems where vocational *and* private schooling are prevalent)? What is the relationship between vertical and horizontal forms of educational stratification? This dissertation research project had made a first contribution to answer these questions through the comparison of Chile and Mexico in the larger educational and developmental context of Latin America.

Vertical and horizontal stratification: beyond the replacement assumption

Previous research has taken for granted what I call the “replacement” assumption – the theory that horizontal stratification replaces vertical stratification as the latter declines with educational expansion. Researchers usually reference the Lucas’ Effectively Maintained Inequality hypothesis as the basis for the replacement assumption (e.g. Ayalon and Shavit 2004)¹¹. There is, however, little empirical research on this issue, mostly due to data limitations. I benefit here from detailed data on Chilean and Mexican birth cohorts covering the last five decades to reassess the relationship between vertical and horizontal forms of educational stratification. My findings seriously challenge the replacement assumption, and call for a conceptual refinement.

Specifically, in Chapter 5 I show that the elite stratification around private schools has been a historical constant since the earliest birth cohorts included in my analysis (individuals born between 1957 and 1966 in Chile and 1947 and 1956 in Mexico), that is, since before the declines

¹¹ To be fair, in its original formulation of EMI Lucas was agnostic about the replacement assumption, and considered the possibility that vertical and horizontal could sometimes coexist and reinforce one another: “The focus of activity may change over time as qualitative differences supplant quantitative differences in importance. Alternatively, it is possible that even when quantitative differences are common, qualitative differences are also important; if so, I posit that the socioeconomically advantaged will use their socioeconomic advantages to secure both quantitatively and qualitatively better outcomes. Unfortunately, it is not possible to adjudicate between these two possibilities in the current analysis, because we lack detailed data on the track placements of earlier cohorts” (Lucas 2001, p1652). In later analyses, this nuance of the original hypothesis was lost.

in vertical inequality that occurred as a result of the expansion of schooling in the more recent decades. The pattern of “pathway closure” demonstrates that students from elite SES background tend to complete not only particular transitions but their entire educational trajectory in the private sector, and this has been so since the 1950s and 60s. This finding suggests that in Chile and Mexico, and perhaps more generally in Latin America, school sector stratification has historically worked more as a qualitative “reinforcement” than as a contingent “replacement” used to merely maintain inequalities in the expansionary context of the last decades.

Yet, while conforming to the general regional pattern, the Chilean case offers an interesting national variation. In the case of Chile, one particular sector, the private-subsidized sector, behaves in accordance with the EMI hypothesis. Indeed, in this case we find that the probability of middle SES Chilean individuals to attend private-subsidized schools systematically increases over time *at the same time* as dropout rates for low and middle SES groups declines. This supports the notion that the Chilean middle classes, endangered by enhanced educational participation of lower socioeconomic groups, rapidly responded to the school choice opportunities provided by the Chilean educational context (e.g. 1980s voucher reform) and left the public system to enroll in the private-subsidized sector – a process that clearly follows EMI’s “replacement” logic. No comparable trends were observable in Mexico, where the private sector lacks the internal differentiation that exists in Chile, thus preventing a massive escape of the middle class from the public system.

Overall, these results demonstrate that future theories of educational stratification should take seriously into account the fact that vertical and horizontal inequalities can not only replace but also reinforce one another, depending on the opportunities that institutional structures open to family choices.

Horizontal stratification starts at early school levels

A common limitation of previous studies is that they have not considered horizontal stratification at the very early moments of the educational trajectory, for example in primary school. This is somehow paradoxical considering that primary schooling has been the first educational level to gain universal enrollment, and the common assumption among stratification researchers is that in contexts of school universalization – which by definition involves declines in vertical stratification – inequality is maintained by means of horizontal differentiation. The literature does not provide a rationale as to why families would always wait until higher educational levels to seek qualitative differentiation, yet the narrow focus of previous empirical research on higher levels seems to work under that unstated assumption. Against that background, my study makes the specific contribution of making this limitation explicit and demonstrating empirically that horizontal stratification already exists among those attending primary school. Furthermore my work shows that early horizontal stratification has strong effects for the rest of individuals' educational and occupational trajectory. The analysis reported in Chapter 5 shows that, in Chile, the socioeconomic stratification between public and private schools at the primary level is very strong. Therefore the chances of attending the private sector in primary are about 75% for someone born in an elite SES family, about 11% for middle SES students, and practically null for low SES students. Regarding future consequences, in both Chile and Mexico these early differences have major effects on future educational outcomes -- so, those attending the private sector in primary school have lower chances of dropping out and higher chances of entering and graduating high school in the private sector. Similarly, students in primary public schools who continue into lower secondary and high school have a very large probability of being placed in the public sector at those higher levels. This strong primary-secondary “pathway closure” is a clear indicator of social segregation between public and private

school that lasts through not only specific transitions but the entire educational trajectory. Pathway effects have been found by studies looking at how stratified placements in secondary schools predict transition into higher education (Breen and Jonsson 2000); in this study I take this notion further by demonstrating that pathway closure or rigidity goes all the way back to placements in primary school.

Placement Transitions: a methodological contribution

In this research I introduce an operationalization of educational attainment that I call *placement transitions*. Placement transitions take components already developed within the ETA approach and put them together in a single framework. The basic tenant of the ETA approach is that inequality of educational opportunities is better understood by focusing on how socioeconomic background affects the relative chances of students' success at particular transition points in the educational career. The *logit* model of school continuation for binary outcomes (i.e. dropping out or continuing into the next level, conditional on making the previous transition) is the methodological correlate of the ETA approach. An important development within this literature was considering educational transitions not only in binary *vertical* terms, as captured in the *logit* model, but also on *horizontal* terms, that is, considering how social background affects students' educational placement within particular transition. This development came from studies looking at curricular tracking within high schools in the United States, where students continuing to grades 11 and 12 are alternatively placed in "college preparatory", "non-college preparatory" or "non-academic" classes (Lucas 2001). The development also came from studies in Europe (e.g. Sweden) looking at background effects on curricular tracking between vocational and academic high schools (Breen and Jonsson 2000).

Methodologically, these studies moved the research from the binary logit model of school continuation towards statistical approaches able to account for multiple horizontal outcomes.

Placement Transitions are measures of educational attainment that combine, in a single outcome, the vertical dimension that is as captured in traditional studies of educational transitions using binary outcomes (continues/drops out), and the horizontal dimension associated with school sector (public/ private). As in the traditional school transition variable, individuals are only eligible for making a transition conditional on having made the previous one, yet there are several paths a student can follow, and previous choices condition further opportunities. Placement transitions are appropriate and realistic outcome variables for models looking at trajectories of students through a horizontally stratified school system. This measure draws upon the logic used in previous studies looking at horizontal stratification in other countries, yet it is an original a methodological innovation of this study.

Effects of horizontal stratification on adult status attainment

Finally, my study contributes to the literature by considering the consequences of horizontal stratification not only on further educational outcomes but also on adult occupational attainment. In Chilean primary school sector differences have long-term consequences not only on future educational but also on adult occupational destinations. I found that school sector differences in primary school are a relevant predictor of adult socioeconomic status, net of years of schooling and family socioeconomic background. I also found that school sector works in interaction with years of schooling, in the sense that the benefit of each additional year of schooling is larger for those who completed primary and high school education in the private sector as opposed to the public sector. The occupational returns of private schools have remained constant in Mexico and have increased over time in Chile.

A basic implication of these findings is that studies of status attainment should consider horizontal differences in schooling to better understand processes of social stratification and mobility. Private schooling can play different roles, for example protecting the elite relative to the middle and SES groups (as the private sectors of Chile and Mexico), or helping the middle SES to differentiate themselves relative to the low SES, as occurs through the private-subsidized sector in Chile.

Another issue raised by these findings is the question of what exactly is it about private schools that produces these benefits in educational and occupational outcomes. Of course, the evidence provided in this study is only correlational, and does not allow for causal inferences. A future challenge is to confirm these findings using research designs able to better control for “unobservable” heterogeneity among students and schools (Schneider et al. 2007). Yet if the findings that I report here were not spurious but robust to methods that more closely approximated randomized assignment, it is fundamental to understand the specific mechanisms that make private school students more likely to obtain better educational and social outcomes. Better instructional or pedagogical quality of private schools is a possible explanatory mechanisms; yet multivariate empirical research comparing academic achievement between public and private students in several international contexts systematically finds that differences disappear as we control for student and school characteristics. This latter finding leads me to believe that well-known mechanisms such as the differential accumulation of cultural and social capital among students, families and communities around private schools convey a more likely explanation for private school effects on both higher education outcomes adult status attainment.

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EDUCATION

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M.A., Pontificia Universidad Católica de Chile, Literature (2006)

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SELECTED PUBLICATIONS

Salinas, D. and P. Fraser (2012). "Educational Opportunity and Contentious Politics: The 2011 Chilean Student Movement". *Berkeley Review of Education*, 3(1), pp. 17-47.

Baker, D. P., D. Salinas, and P. Eslinger (2012). "An envisioned bridge: Schooling as a neurocognitive developmental institution". *Developmental Cognitive Neuroscience*, 2S (2012) S6-S17.

Smith, W., D. Salinas and D. P. Baker (2012). "Multiple Effects of Education On Disease: The Intriguing Case Of HIV/AIDS in Sub-Saharan Africa". In A. Wiseman and R. Glover (eds.) *The Impact of HIV/AIDS on Education Worldwide (International Perspectives on Education and Society*, Volume 18), pp. 79-104.

Raczynski, D. and D. Salinas (2008). "Aportes y Desafíos en la Evaluación de Políticas y Programas de Mejoramiento Educativo. Reflexiones desde Nuestra Práctica de Evaluación en Chile". *Revista Iberoamericana de Evaluación Educativa*, 1 (1), pp. 79-92.

AWARDS AND HONORS

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|-----------|---|
| 2014 | David Lee Stevenson Award, Sociology of Education Section, American Sociological Association. Honorable Mention for "Educational Opportunity and Contentious Politics: The 2011 Chilean Student Movement" |
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POSITIONS

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| 2013-2014 | Visiting Researcher in the Population Research Center of the University of Texas at Austin |
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