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14. AGAINST ALL ODDS: HOW CHILE DEVELOPED A SUCCESSFUL TECHNICAL AND VOCATIONAL SECTOR IN POSTSECONDARY EDUCATION

INTRODUCTION

Chile's higher education encompasses three types of institutions: universities, professional institutes (*institutos profesionales* or *IP*), and technical training centers (*centros de formación técnica* or *CFT*). Unlike vocational and technical sectors in other Latin America countries where the tertiary level is dominated by universities with little space for vocational and technical institutions, Chile's professional institutes and technical training centers now enroll 44 % of all students in higher education in the country. In this sector, almost all institutions are private and a significant majority of them is for-profit although the law requires universities to be organized as non-profit foundations or corporations.

This chapter traces Chile's differentiated postsecondary system from the reform of the early 1980s to its configuration today. Midway in this 35-year period there was a turning point in the development of the non-university sector, resulting from the availability of financial aid to its students. The first section of this chapter describes the early evolution of the current system to the end of the last century. The second section provides an account of the expansion cycle of professional institutes (IP) and technical training centers (CFT) enrollments following the extension of government scholarships and subsidized loans to students in non-university postsecondary institutions. The final section offers a reflection of the challenges of differentiation and the sustainability of the diverse missions of universities, IPs and CFTs, taking into consideration quality assurance, relationship with industry, and current policy developments in Chile

Expansion is possibly the most salient characteristic of the recent evolution of Chile's higher education: enrollments more than trebled since 1990, reaching close to 1.2 million students currently. This puts Chile at the average enrollment rates of OECD countries (Mineduc 2011). In this transit to mass higher education, the sectors

of professional institutes and technical training centers (the IP and CFT sectors) have been key. During the last decade this sector grew faster than universities. Representing for many years only about 30% of enrollments, IPs and CFTs now educate 44% of all students, and enroll 56% of first-year students (Paredes & Sevilla 2015). Given that universities are allowed to offer technical programs, it is worth noting that only 11% of students in technical programs study at a university.

Universities continue to occupy the apex of the pyramid of prestige and status, but it is no longer the case that all IPs and CFTs rank below the whole of the university sector. Increasingly society has come to realize that good quality technical and vocational education merits status although perhaps not yet on par with that of the most prestigious universities, but certainly above many undistinguished ones.

ORIGINS, STRUCTURE, AND EARLY DEVELOPMENT OF THE NON-UNIVERSITY SECTOR

Massification of higher education begun in Chile in the early 1990s, in large part a result of more liberal policies making it feasible to establish private institutions of higher education (Brunner 1986). Under the dictatorship of Gen. Augusto Pinochet (1973-1990), reforms inspired by neoliberal ideas were introduced in several key social sectors such as labor, pensions, health care, and education (Bernasconi & Rojas 2003).

The educational reform at the tertiary level, initiated in 1980, was not primarily concerned with the emergence of the global knowledge economy or its effects on national competitiveness. Rather, reform originated with the expansion of secondary enrollment and the growing pressure from high school graduates to continue their education. The university enrollment rate was 7.5% of the age cohort in 1980 (Bernasconi & Rojas 2003). At the time, military rulers and their advisors envisioned a dual higher education system; along with universities, there would be a new subsector of non-university postsecondary institutions (Castillo 1980).

By 1980, Chile had eight universities: two public, three private non-ecclesiastical and three private Catholic. Their main campuses were located in Santiago or other large cities and a network of branch campuses extended throughout the country. Along with the traditional university degrees organized in programs of five to seven years, most of the universities offered short-cycle technical programs, ranging from two to three years of study. Further, beginning in the late 1960s, several universities set up outreach programs to offer basic education and labor skills to working adults, including literacy programs.

By 1966, the proportion of students enrolled in study programs below the higher education level ranged from 12% to 75% (Brunner, 1986, p. 28). In spite of this large educational supply, available university seats were not sufficient for the existing demand, and some of the excess demand was met by vocational programs at schools that operated without official recognition, while the rest entered the workforce without further education. To improve workforce skills, the state founded the National Institute for Professional Training (INACAP) in 1966, to train adult workers in technical and vocational trades. INACAP was not, however, a postsecondary institution and its students were not required to have a high school diploma (Dittborn 2007).

To address the growing problem of unmet demand, new legislation was passed in 1980 and 1981 to allow the creation of new private universities, and to create two new categories of higher education institutions: professional institutes (*institutos profesionales*, IP) and technical training centers (*centros de formación técnica*, CFT). The distribution of degree granting authority among the three kinds of institutions was organized as follows. CFTs could only grant technical diplomas for two-year programs. IPs would issue technical diplomas for two-year programs, and professional degrees for four-year programs. Universities retained exclusive authority to issue professional degrees corresponding to twelve careers (including law, medicine, engineering, pharmacy, architecture, and other regulated professions), and would also be able to offer programs and degrees found in CFTs and IPs. In other words, instead of each kind of institution having an exclusive portfolio that would have resulted in a clear distinction among educational institutions and degree programs, a hierarchical structure emerged, where each kind of institution could award the degrees granted by institutions of lesser status. At the bottom, CFTs had the strictest scope. In the middle, IPs' portfolio overlapped partially with CFTs, but added additional degree programs. At the top, universities could offer any kind of degree program. The rationale for this hierarchy is unclear due to the paucity of records for legislation approved during the authoritarian regime of that time. The idea might have been to foster economies of scale and the possibility for students to transfer from short programs to longer degrees, as the requirement for IPs was that their two-year programs belonged to the same knowledge area as their longer programs. Regardless of the intended purpose, this overlap of degree granting authority, even today, generates much confusion in Chile's higher education system.

Originally, only universities were recognized as autonomous institutions with academic freedom, but legislation passed in 1990 extended institutional autonomy and academic freedom to all kinds of higher education institutions. Although, universities are authorized to offer all types of degree programs, they alone in the institutional hierarchy were entrusted with a research mission and a role in the cultivation of the arts and letters. In turn, the legal framework for IPs tended only towards the formation of professionals needed for the economic development of the country (Ministerio de Educación 1981a, 1990). In the case of CFTs, the law only defines the technical

degree they can issue (Ministerio de Educación 1981b, 1990). The conditions and requirements to establish private IPs or CFTs were extremely lax: only administrative ministerial approval was needed. However, new IPs were supervised by a university (chosen by each IP) that had to approve their study plans and examine their graduating students until three cohorts had graduated. CFTs were supervised by the Ministry of Education.

To encourage private investment in the non-university postsecondary sector, IPs and CFTs could be established as for-profit institutions. It was also expected that the profit motive would foster links with industry. Along with these new private institutions, the government envisioned public professional institutes as well, transforming seven former branch campuses of the state universities into professional institutes. By 1984, in addition to those public IPs, 18 private ones had been established (Brunner 1986), with total enrollments of about 30,000 in both sectors. The growth of CFTs was faster. By 1984, 101 private centers had been established enrolling around 45,000 students. Thus, barely three years after their inception, the IP and CFT sector represented 40% of postsecondary enrollments in Chile, confirming the pent-up demand for higher education (See [Table 2](#)). Also during the decade of 1980, INACAP, the national workforce training agency, was privatized and recognized as a postsecondary institution (Espinoza 1994). In turn, the Department of Peasant and Worker Education at the Catholic University of Chile (DUOC) was transformed into a IP to achieve managerial and financial independence from the University, although it remains a university affiliate.

Private universities, CFTs and IPs were funded entirely through tuition fees. The military regime introduced tuition fees for public universities as well, beginning in 1982, but public subsidies have been always available for the latter, to fund research and to contribute to the cost of teaching. The subsidized loans program established to mitigate the impact of tuition fees covered only students in public universities and public IPs (Ministerio de Educación 1981c).

Yet the fortunes of the vocational and technical sector correlated to the availability of university alternatives: the 40 new private universities that appeared in the late 1980s and early 1990s drove non-university matriculation from a peak of 49% of all students in 1989, to 30% in 1997. By the end of the 1980s, the net enrollment rate in higher education had doubled to 14%, and doubled again during the following decade, reaching 27% by 2000, but concentrated in universities (Bernasconi and Rojas 2003, p.110).

Table 1: Undergraduate Enrollment growth by types of postsecondary institutions (1967-2016)

<i>Year</i>	<i>CFTs (centros de formación técnica)</i>	<i>IPs (institutos profesio- nales)</i>	<i>CRUCH*</i>	<i>Private Universities</i>	<i>Académias</i>	<i>Total</i>
1967			55,653			55,653
1970			76,979			76,979
1975			147,549			147,549
1980			118,978			118,978
1985	50,425	24,095	109,000	4,951	8,138	196,609
1990	77,774	40,006	108,272	19,509		245,561
1995	72,735	40,980	154,986	69,004		337,705
2000	52,643	80,593	201,262	101,386		435,884
2005	63,176	114,546	232,477	184,828		595,027
2010	128,566	224,301	281,686	303,785		938,338
2015	146,515	373,171	304,577	341,391		1,165,654
2016	141,711	380,988	312,855	342,883		1,178,437

* CRUCH is Chile's Council of University Rectors, an association of the 25 oldest universities in the country

Source: Data 1983-2016, from the Chilean Ministry of Education; Data 1967-1982, from Arriagada (1989) and Brunner (1986).

The transition to mass higher education: The contribution of the technical and vocational sector

At the peak of private expansion in 1990 there were 60 universities, 79 professional institutes (IPs), and 161 technical training centers (CFTs) in Chile. All IPs and CFTs were by then private, after the state IPs were transformed into universities. Many IPs and CFTs were economically and academically precarious, with too few students to survive. As a result, the decade of the 90s saw the closing or merger of various institutions, with the number of IPs contracting to 51, and with only 112 CFTs remaining in operation by 2002 (Bernasconi & Rojas 2003).

In spite of the decline of the number of institutions, enrollments continued to increase in higher education, reaching half a million students in 2002, and one million a decade later, representing a 37% net rate of enrollment. During this period, students from families in the lower 20% income bracket experienced the greatest increases in

net coverage. At the beginning of the 90s, students from the most affluent 20% participated in higher education at 9.3 times the rate of those in the lower 20%. By 2013, this ratio had been reduced to 2.1 times. While inequality remains a problem, the gap is considerably smaller than in the past.

One of the most important mechanisms to promote greater equality of access to higher education was the extension of public funding for students in private education institutions (including CFTs and IPs). In 2006 the Ministry of Education initiated a state-guaranteed credit (CAE), and increased funding for the *Beca Nuevo Milenio*, a scholarship exclusively for students in technical and professional programs. Between 2005 and 2012 the number of beneficiaries of this scholarship increased by a factor of almost eight (approx. 12,000 to 95,000).

This boom of student aid was the most important policy development for professional institutes and technical training centers since their creation 25 years earlier. Previously, the associations of technical and vocational postsecondary sector, and the presidents of the larger institutions, had long denounced the injustice of a national student aid regime that favored the more affluent students attending public universities and ignoring the less well-off students at IPs and CFTs. However, the political clout of the sector was negligible, a combined result of the social origin of their students and families, the fragmentation of the sector in some 160 independent institutions, the absence of state-owned IPs and CFTs, and the poor quality of many of the smaller institutions. Moreover, as it is often the case with the non-university sector, it had to contend with the generalized belief that non-university programs were a second-rate option, a form of remedial education for those not prepared to undertake university studies (Paredes & Sevilla 2015).

The effects of the growth in public funding were first noticeable in 2007. Ten years later, CFT and IP enrollments increased by some 280,000 students, almost twice the rate of expansion of university matriculation during the same period. Previously, the intake of the sector was restricted to the pool of students with admission test scores too low for universities, or too poor to afford university tuition. Since IP and CFT students came from the most disadvantaged economic backgrounds, tuition fees were modest, and so were the budgets of these institutions. The availability of student financial aid increased the pool of students eligible for enrollment at CFTs and IPs adding those who had not been able to afford fees previously. It also allowed the institutions to increase their tuition fees, since students receiving financial aid had additional resources at their disposal.

Along with the new financial aid instruments, a national system for institutional and program accreditation in higher education was introduced although the system does not have standards or adequate criteria to cover the diversity of institutional missions, particularly with respect to non-university institutions. Some progress has recently been made, in the form of special accreditation criteria for CFTs, but IPs do not have specific criteria yet (Vertebral 2014).

PRESENT CHALLENGES AND PERSPECTIVES ON THE FUTURE

As noted previously mergers and acquisitions have decreased the numbers of institutions quite dramatically, as well as financial hardships, due in many cases to lack of institutional accreditation since this condition is mandatory to access public financial support. Moreover, the concentration of enrollment is quite high: 80% of non-university students attend one of eight IPs or three CFTs (Paredes & Sevilla 2015). In terms of fields of knowledge, 77% of enrollments is found in technology, administration, and health (Paredes & Sevilla 2015).

Table 2: General Information of Postsecondary Chilean System. 2016

<i>Institution Type</i>	<i>Number Institutions</i>	<i>Enrollment</i>	<i>Academic Staff</i>	<i>Public Investment (M\$)</i>
CFTs	52	141,711	10,948	66,275,972
IPs	42	380,988	22,231	166,973,146
CRUCH Universities*	25	312,855	28,244	926,897,753
Private Universities	35	342,883	43,660	381,646,523
Total	154	1,178,437	105,083	1,541,793,394

* CRUCH is Chile's Council of University Rectors, an association of the 25 oldest universities in the country
Source: Chilean Ministry of Education (2016) and Comptroller General of the Republic (2015).

A second distinct feature of higher education in Chile is the extent of privatization. This is not just a reflection of the current institutional base, with only 16 public universities compared to 44 private universities, 43 private professional institutes, and 54 private CFTs (Zapata & Tejada 2016, p.18). Nor is it just the fact that 85% of enrollments are in the private sector. As previously explained, since the 1980s public universities have increasingly depended on tuition payments for their income. Currently, private expenditures (mostly tuition, and some contract based research and technical assistance) account for 60% of the overall funding of the system, while the government provides 40%, two-thirds of which comes in the form of financial aid (Urzúa & Espinoza, 2015, p. 405).

Reliance on tuition exacerbates the market and competitive elements of the system. Since all institutions depend on enrollment for financial sustainability, the competition among them for students is fierce and not always carried out through legitimate means. Moreover, since the return to democracy in 1990, the state has relied mostly on market instruments to fund the system, such as financial support for students. In

turn, contract funding has been the favorite tool to create funds and government calls for proposals are the rule in university research funding. All this in a context of ample autonomy of institutions over admission criteria, the programs and number of seats they offer, the curriculum, the name of the degrees awarded, their finances and organization, and every other significant aspect of their operation, that is only slightly moderated by accreditation criteria.

Partly, as a result of massive student protests in 2011 that put pressure on the government to reduce the dominance of market forces in the higher education system, the current administration has proposed a greater role for the state in steering the system. The government is also working on restoring free tuition for less affluent students, including those enrolled in not for-profit CFTs and IPs. In July 2016, a higher education reform bill was sent to Congress, defining a new legal framework for accreditation, regulatory oversight, governance of institutions, policy planning, and funding. The reform bill follows legislation passed earlier in 2016 creating 15 state CFTs, one in each of the regions in which the country is administratively divided, and the establishment of two new state universities in the two regions in which there were no public institutions. However, no academic project or strategic development plan preceded the creation of any of these institutions, so the likelihood that they may be innovative seems remote. Moreover, the public CFTs are to be advised by their region's public university, a pairing that doesn't bode well for innovation either.

This link between CFTs and universities is not new in Chilean higher education. At the end of 1990 the Ministry of Education recommended that the universities do not offer technical programs directly. As a result, many universities created their own CFTs, but there is no evidence that this hierarchal pairing helped the development of the latter (Bernasconi 2006).

Another weakness of the new legal framework for higher education is the lack of government incentives for CFTs and IPs to develop links with vocational high schools. About 40% of the graduates from high school come from the vocational track, and half of them continue their studies mainly in technical and professional careers offered by CFTs and IPs. However, as a rule, their previous studies are not taken into account, and they start their programs in the same condition as those who come from the academic high schools. This is inefficient and discouraging for students who want to further their knowledge in the same occupational fields that they followed at the secondary level (Sevilla, Fariás & Weintraub 2014). Neither is attention paid to the link between formal technical and vocational education or the learning acquired outside of the educational system (Paredes and Sevilla 2015).

Non-completion of a degree program is another weakness of Chile's higher education, more critical in the CFT and IP sector than in universities. According to Ministry of Education data, only one out of four students enrolled in two-year technical programs in 2008 received a diploma after three years of study (Ministerio de Educación

2015a). Dropping out is not only related to the student's socioeconomic and academic background or admission policies, but also to institutional factors, such as lack of schedule and curricular flexibility. In evening programs that enroll a significant percentage of working students, only 57% of first-year students enroll the following year (Ministerio de Educación 2015b). In order to improve retention, flexible programs that allow for part-time studies or combining classroom teaching with online activities are essential. However, public funding discourages the provision of this kind of programs, because it is structured for full-time study.

A final word on the relationship between universities and the IP and CFT sector. Chile has yet to develop world-class research universities (Bernasconi 2014, 2011). A handful of universities have increased their research capacity and output quite significantly during the past two decades, but universities remain focused mostly on undergraduate teaching. The absence of a strong foundation of scholarship in most undergraduate and masters programs in Chile precludes the possibility of a clear distinction between professional programs at IPs and universities. Except for the programs leading to regulated professions that can only be offered in universities, there is widespread overlap in program areas, names of degrees, forms of instruction, and profiles of the professoriate. IPs and CFTs stress that their teaching is oriented towards practice and on the principle of learning by doing, presumably in contrast to the more theoretical teaching at universities. But this differentiation is more an intention than a reality, except in the stronger IPs and CFTs. In turn, universities with less status and with tuition fees closer to those of IPs, rely almost exclusively on part-time teachers who work elsewhere, or on faculty dedicated full-time to teaching and administration, an arrangement that is found also at IPs and CFTs. Thus, differentiation based on faculty profile is not clear either.

Lack of mission differentiation with universities hampers the development of IPs and CFTs insofar as they continue to be regarded as a second-rate option, a form of remedial or interim education with a university degree as a final goal.

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