

Are there research universities in Chile?

Andrés Bernasconi  
Universidad Andrés Bello, Chile  
abernasconi@unab.cl

Paper presented at the Conference:

“Flagships”: Research Universities in  
Developing and Middle-Income Countries  
Boston College, June 24–25, 2005

## Are there research universities in Chile?

### Introduction

Chile lacks any example of the gigantic public universities one finds in other parts of Latin America, which by sheer force of their tradition, output, size, and political clout, occupy, for better or worse, a central position in their national higher education systems. The *Universidad de Chile* could perhaps have become one such case, albeit smaller, had it not been fragmented under the military dictatorship of Gen. Pinochet (1973-1990). In effect, throughout the twentieth century the *Universidad de Chile* (UCH), established in 1842, and the nation's oldest university, remained the premier university in the country, educating the professional and political elites, supporting the arts, adding since the 1950s some incipient research to its main professional training role, and starting to build graduate programs and a small professional cadre of full-time academics with advanced degrees in the 1960s. Also in that decade, the UCH created a network of regional branches, which were to perform the function of feeder colleges to the main campuses in Santiago (Levy and Bernasconi, 1998:464-467). The 1967-68 national university reform brought to it the typical Latin American system of "co-governance" by faculty, students and administrators, the replacement of professorial chairs by a departmental organization, and a great expansion of enrollments, from 27,000 in 1967 to almost 66,000 in 1973 (Brunner, 1986:31-40).

But the 1973 military coup hit the UCH very hard: it saw faculty, students, and administrative personnel purged, eight academic units were eliminated and their personnel dismissed, and enrollments shrank to 48,800 in 1980 (Brunner, 1986:49). Moreover, the military regime's higher education reform of 1981 severed from the UCH all of its regional branches, and almost half of its Schools in the capital city of Santiago, which were turned into small, independent public universities. By the time democracy returned, in 1990, the UCH had campuses only in Santiago, had been reduced to 18,000 students, and the share of public funding in its budget had dropped to 37% (Consejo de Rectores, 1990).

The remaining Chilean universities predating the expansion of the system in the '80s were not primarily created to lead the higher education system, or to be models of new approaches to teaching or research. The *Pontificia Universidad Católica de Chile* emerged in 1888 as a conservative response to what the Catholic church perceived as the onslaught of liberal, secularizing ideas in the Government and in the *Universidad de Chile* (the separation of church and state was formalized only in 1925). The other private universities established during the first half of the

twentieth century emerged rather from the desire of regional elites to have local universities for professional education and the dissemination of culture.

*Universidad Técnica del Estado*, the second public university, was founded in 1947 to offer technical and vocational programs, pedagogical education for the technical schools, and engineering degrees.

This is possibly why the notion of "flagship" university is not current in Chile. There is some evidence (Bernasconi, 2003) that, to the extent that contemporary Chilean university leaders look at a local university for inspiration, they consider instead the research-oriented *Pontificia Universidad Católica de Chile* (PUC), which led throughout the eighties and nineties a most spectacular process of academic development and administrative reform (Clark, 2004: 110-121, Bernasconi, 2005). But, in any case, in a small country of 15 million inhabitants, and a very open economy, models for everything are most often sought abroad-not locally-, and the Catholic University, moreover, because of its affiliation, which it takes very seriously indeed, is an unlikely candidate for flagship status within the system.

Instead, the favorite term nowadays of university administrators, scholars, and government officials to denote excellence in the pursuit of a genuine university mission is "research university". And even this usage is recent, of the last decade or so, once a handful of Chilean universities—*Universidad de Chile*, *Pontificia Universidad Católica de Chile*, *Universidad de Santiago*, and a few others—had begun to approach some of the attributes embedded in the expression, and after the increasing entropy of the Chilean higher education system (which in the ten years after 1981 went from 8 universities, to 63 extremely diverse institutions of that name) made it necessary, especially among university people, to differentiate classes of universities.<sup>1</sup>

By the time the first classifications and rankings of universities made their appearance in Chile in 2000, the concept of research university had become among academic leaders the standard form of grouping Chile's most prestigious universities. Accordingly, the rankings began to call the topmost group "research universities." This group has always been composed either by the same five universities, which are the ones with the greatest numbers of research grants and publications in the mainstream academic literature, or by the top three among these, when the ranking has defined a more restrictive set of criteria for membership in the research university group. The adoption of the idea of the research university as a category to describe some of Chile's leading institutions of higher education is now rather unproblematic, and continues to be deployed to characterize a segment of the university sector (see, for instance, Brunner, Elaqua,

Tillet, Bonefof, et al., 2005:147-8).

But, aside from local usage, are these Chilean institutions research universities if measured against an international standard? If they are not research universities, are they in a path of development that may eventually transform them into that type of institution? To answer these questions we need, first, to identify the essential, universal elements of the notion of a research university, and then, to measure Chile's best performing institutions, in terms of research, against such definition. Those are the purposes of this chapter. I will, therefore, begin by presenting an analytical construct of a research university, an ideal type of sorts (Weber, 1949: 89-112), abstracted from the U.S. and international experience. I will next explain why I consider that, in spite of the great progress of research in Chile in the last decade or so, there are still no research universities in this country. Finally, I will elaborate on the trends that have to date propelled the research agenda in Chile, and which are likely to remain driving forces in the thrust of Chilean research-oriented institutions to become research universities.

Data for this chapter is of two sorts: on one hand, I rely on publicly available national and institutional statistics on research funding, personnel, and output. The qualitative data, on the other hand, comes from Bernasconi (2003), and were collected through site visits to four research-oriented Chilean universities, conducted between October 2001 and January 2002. The qualitative material deals mostly with the profiles of professors in those universities, and with the changing nature of their jobs as their institutions strengthen their scientific capabilities.

### **The idea of the research university**

The idea of the research university is nowadays best exemplified in the institutions in the apex of the US higher education system, but it is, of course, not native to the U.S. There is a long and winding road from the German philosophers to whom we owe the modern idea of the university and its first expression in the University of Berlin, to the reluctant reception of the German model in the US in the second half of the nineteenth century (Geiger, 1986), to the solidification in the decades of the 1920s and 1930s of research as the central mission of U.S. universities, to the worldwide prominence achieved after World War II of universities like Harvard, Chicago, California, Michigan, Yale, Wisconsin, or MIT.

But the bottom line is that, as a consequence of this events, the American idea of the research university irradiated to the rest of the world, to the point in which it has become the golden standard to which universities throughout the world compare themselves and through which they are assessed.

The *ISI Web of Knowledge* search engine for academic articles in peer-reviewed, mainstream journals allows for the following exercise: if one enters "research university(ies)"<sup>2</sup> in the *topic* search field, the search engine returns 431 articles, published between 1970 and 2005, where the expressions "research university" or "research universities" appear either in the title, the abstract, or the keywords. If one tries the same kind of search using the expression "elite university(ies)", there are 17 results. "World-class university(ies)" yields four pieces, while the query "flagship university(ies)" retrieves only one. As we can see from the data, "research university" is across the world of indexed scholarship the most current designation for the institutions at the top echelon of higher education. Moreover, a review of the abstracts of the items in the list for "research university(ies)" reveals that in approximately 85% of them, research university is but a classificatory category for defining the type of higher education institution that served as a fieldwork site, or control group, or in which the problem of interest had been studied (be it race relations, salary of professors, safety of laboratories, use of instructional technology, public health issues, and many more), or an independent variable in a regression model. Only in some 15% of the articles were the functions, characteristics, problems, or missions of research universities, as such, the topic of interest. In other words, the notion of a research university is much more often taken as a given than turned into a research question.<sup>3</sup> Only a relatively minor part of the research effort expended around this institution deals explicitly with the definition of the idea of a research university .

And this usage of the research university designation is by no means restricted to U.S. scholarship. Ten percent of the articles on research universities retrieved by the search engine refer to universities outside the US (including Australia, Canada, Chile, China, France, India, Israel, Italy, Japan, Korea, the Netherlands, Russia, Singapore, Switzerland, and the UK). In Europe, twelve prestigious universities formed the *League of European Research Universities* (LERU) in 2002, an "association of twelve research-intensive universities sharing the values of high-quality teaching within an environment of internationally competitive research."<sup>4</sup> Another association of research universities exists in Australia.<sup>5</sup>

The influence of the classification of U.S. institutions of higher education by the *Carnegie Foundation for the Advancement of Teaching* cannot be overlooked in the worldwide dissemination of a model for a research university. With its precise quantitative standards for membership in the group of those universities with strongest research orientation, it has provided scholars, policy analysis, clients, and stakeholders in general, in the U.S. and abroad, with a clear, simple, and widely used tool to identify the institutions that merit the name of research university.

What would then be, in this context, a conceptual construct for "research university," against which real universities may be fruitfully compared for purposes of description and analysis? Geiger (1985:371) groups the defining features in three categories: faculty, money, and students, to which I would add as a fourth element an overall research ethos. Let's take up each in turn.

**Faculty:** A research university is composed by full-time faculty members who have been trained as researchers, are experts in a field of knowledge, devote most of their time at work to research, and contribute with their publications to scholarship in their field. Intellectually, they see themselves as members of an international disciplinary community (Jencks and Riesman, 1968). Professionally, they belong in a guild whose norms for matters such as career structure, academic freedom, and job description are not within the legitimate power of the employer to alter in their essential elements (Geiger, 1985:380; Goodchild, 1991:3). Faculty are organized in academic units where sufficient numbers of colleagues with the same profile exist within each field of specialization so as to make academic dialog possible and rewarding.

**Economic resources** to support research, in the form of salaries sufficient to secure a full-time dedication of faculty members to their university jobs, and state-of-the-art laboratories, supplies, bibliographic resources, and other material infrastructure necessary for research. These resources are chiefly obtained through funds allocated on the basis of the merit of the proposed research project or program. (Thelin, 2004:356-7).

**Students** are needed because, otherwise, we would be in the presence of a research institute, not a university. But not any kind of student will do. First, students are needed both at the undergraduate and graduate levels. A sizable group of graduate students are working at the doctoral level.<sup>6</sup> Finally, students in research universities are a highly selected crop, since ample resources and a reputation for quality, both associated with research achievements, attract the best applicants (Braxton, 1993).

**Research ethos:** Freedoms of inquiry and teaching are a must, of course, but the culture of a research university reaches beyond academic freedom. The difference between a research university and a university that carries out research is that, in research universities, scientific achievement is the overarching goal of the institution, and its requirements, processes, and values, suffuse the whole of the functions of the university. These are institutionalized within the organization, i.e., they are elements of the every-day, taken-for-granted features of the university.

These days, research universities in the U.S. and elsewhere in the developed world find themselves increasingly challenged by the growing need to make their

research economically relevant, to become more entrepreneurial and to get closer to their markets. I am not considering these phenomena in the previously proposed ideal-type because so far they seem to pertain not to the substance of the idea of the research university, but rather, to actual forms of expression of this idea in a particular era-the present time.

How would the most research-intensive Chilean universities measure against this mental construct of the research university? To this question we turn next.

### **Research-oriented universities in Chile**

Scientific research met Chile's universities relatively late, not only in comparison to the developed world, but also measured up to neighboring countries like Brazil and Argentina. By the late sixties, Chilean universities were almost exclusively undergraduate teaching institutions. Although they concentrated 80% of the nation's incipient research and development personnel, there was only one doctoral program in Chile in 1965, and only 5% of the faculty in the *Universidad de Chile* had doctoral degrees in 1967. Data for 1966 also show that 68% of the professors in the *Universidad de Chile* worked there part-time (Brunner 1986:18-30). Only in the last two decades have some of Chile's universities begun to match their rhetoric about a research mission with actual scientific accomplishments, and the process of institutionalization of research is still in progress.

Since 1982, the bulk of funding for academic research in universities is channeled through CONICYT's (National Council for Scientific and Technological Research) main competitive research fund, called FONDECYT. Given its characteristics as a peer-reviewed competitive mechanism for allocation of research funds for all fields of inquiry, the FONDECYT program looks like a good place to start if one is to identify the universities most active in research in Chile. The distribution of FONDECYT research funds by university in the period 1982 through 2000 shows that five universities captured almost 80% of all funding. These are *Universidad de Chile*, with 37,4%, *Pontificia Universidad Católica de Chile* (21,5%), *Universidad de Concepción* (8%), *Universidad de Santiago* (6,4%), and *Universidad Austral* (6%). The next university down the list appears with half of the amount of *Universidad Austral* (CONICYT, 2000:45). These five universities turn out also to be the ones with the most research output, measured by the number of ISI publications in the years from 2002 to 2004, as can be seen, together with other indicators, in Table N° 1.

Table N° 1: Indicators for five research-oriented universities in Chile, year 2004

Estab. Year	Enrollments			Faculty (2003)				Research			
	Total	% High score s	% Gra- duate s	Total	% FT	% PhD	%of FT w. PhD	Pro- jects 3 yrs.	Publica- tions 3 yrs.	N° Ph.D.s conferred 2003	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	
<i>Universidad de Chile</i>	1842	26,470	94	11.7	3,392	35.9	20.7	34,3	569	2,322	50
<i>P. Universidad Católica de Chile</i>	1888	19,829	94	10.0	2,349	43.4	48.9 (*)	71,6(*)	393	1,432	37
<i>Universidad de Concepción</i>	1919	18,411	51	5.1	1,430	57.1	25.5	40,8	222	928	34
<i>Universidad de Santiago</i>	1947	17,555	75	3.2	2,425	25.0	13.9	38,8	157	546	8
<i>Universidad Austral</i>	1954	9,295	41	3.9	784	67.2	22.6	31,7	95	376	5
Average		18,312	71	6.8	2,076	45,7	26.3	43.4	287	1,121	27

Sources: (a) and (c): Consejo Superior de Educación *Indices* database, year 2004. (b) DEMRE, AFI distribution 2005, for the class of 2004. (d), (e), (f), (g) and (j) is data for 2003 from Consejo de Rectores (2003). (h) and (i): El Mercurio (2004).

Notes: (b) "High scores" is the % of freshmen among the 27.500 best scoring students in the national standardized admissions test. (c) "% Graduate" is the proportion of graduate students in total enrollments. Indicators for "Faculty" consider: (d) total headcount, (e) the proportion of faculty who are full-time, (f) the proportion of faculty with a PhD degree, and (g) the proportion of full-time faculty who are PhD holders. Under "Research": (h) "number projects" considers all externally funded, and competitively assigned, research grants, and (i) "publications" is the sum of all ISI-indexed articles published in the previous three years. (j) is the number of Ph.D. degrees conferred in 2003.

(\*) Includes faculty with a medical specialization degree. If those are excluded, the proportion of PUC faculty with doctorates reported by *Qué Pasa* (2004) is 29.7%, and FT faculty with Ph.D.s is 47%.

Table N° 1 provides a quantitative profile for the five universities with the most research resources and output. They also happen to be five of the six oldest universities in Chile. If this list of five had been expanded to include the universities ranking sixth, seventh, and eighth in research output (measured by the number of indexed articles published), we would then have had in our list all eight oldest universities, precisely those founded prior to the expansion of the system in the 1980s.

The figures in Table N° 1 relate to some of the elements of the ideal type of a research university essayed above. On average, only some 45% of the faculty in these universities have full-time appointments; the range goes from 25% at *Universidad de Santiago* to 67% at *Universidad de Concepción*. Turning now to faculty

credentials, we have that, on average, less than half of full-time professors have a PhD degree. This is probably why the faculty of the *Universidad de Chile*, 3,392 strong, produced just 2,322 ISI articles in three years, at a rate of two-thirds of an article per professor in three years. This productivity rate is similar in *Pontificia Universidad Católica de Chile* and *Universidad de Concepción*. In *Universidad de Santiago* and *Universidad Austral* the figure is even lower. These numbers can be contrasted with Steiner's in this volume, who reports 4,450 ISI articles in the year 2003 for the 4,953 professors at *Universidade de São Paulo*. Another comparison can be made with the average of 4,316 Science Citation Index and Social Science Citation Index articles published annually by the top 20 Chinese universities, reported by Liu, also in this book. Another Brazilian institution, closer in size to the Chilean universities presented here, is *Universidade Estadual de Campinas*. It has some 1,800 professors, 90% of them full-time, and 94% with doctoral degrees. Their output is 2,264 ISI articles per year (in 2001) (UNICAMP, n.d).

With the figures in Table N° 1 in sight, it is hard to make a case for these Chilean universities meeting the criteria set above of being "composed by full-time faculty members who have been trained as researchers, are experts in a field of knowledge, and contribute with their publications to scholarship in that field".

A similar conclusion has to be reached with regard to doctoral students. The proportion of students who are in graduate programs reaches 10% or higher only in *Universidad de Chile* and *Pontificia Universidad Católica de Chile*, and typically, only one every three or four graduate enrollments corresponds to a doctoral student. This shows in the numbers of doctorates conferred in 2003 (see Table N° 1).

The quality of incoming students is one dimension where the performance of at least three of the five institutions in Table N° 1 seems to conform with the ideal type of a research university, and *Universidad de Chile* and *Pontificia Universidad Católica de Chile* are the most selective institutions nationally in this regard. But of course, in the absence of the other attributes of research universities, this dimension alone is not enough to support a research status for these institutions.

Site visits conducted to *Universidad de Chile*, *Pontificia Universidad Católica de Chile*, *Universidad de Santiago* and *Universidad Austral* between October 2001 and January 2002, reported in Bernasconi (2003) provide some insights as to the standing of the scientific endeavor within each institution. In all of these universities, highly research-oriented units (Schools,<sup>7</sup> Departments, Centers) coexist with other units-especially in the liberal professions, the social sciences, and the arts-whose dominant role is teaching undergraduate students. In other words, the qualified human resources for research, the economic resources, the doctoral

students, and the scientific ethos that exist in these universities are not evenly spread across the whole of the institutions, and different degrees of penetration across the academic units of each university of cadres of full-time faculty with doctoral degrees, with their research grants, and zest for publication in international outlets, goes a long way to explain the difference in research output among the universities considered here: greatest in *Universidad de Chile* and *Pontificia Universidad Católica de Chile*, than in the rest. In other words, the figures for faculty reported in Table N° 1 should not be read as if those proportions exist, more or less constant, across schools and departments. Rather, there are some units-typically in the natural sciences-where the proportion of full-time faculty with doctorates would reach 100%, there are well established doctoral programs, and the research output would be between one and two ISI journal articles per capita per year (Krauskopf, 1999).

Another element to account for the uneven research profile and performance within each university is the governance structure. The *Universidad de Chile* (UCH) is the most extreme case, but it serves to illustrate trends that, albeit less forcefully, are nonetheless also present in the other universities. Decentralization is so strong that UCH is usually conceptualized by its members as a federation of schools, some of which are excellent, some of only average quality, all sharing a common brand name (these are forms of internal diversification *Universidad de Chile* shares with the Latin American giants *Universidad de Buenos Aires* and *Universidad Autónoma de México*, described in his volume). Harvard University is often brought up as an example of this federation model, but UCH officials are quick to point out that, unlike Harvard, there are no common minimum standards in UCH, not all schools have a nationally recognized critical mass of scholars, and the central administration does not have the financial clout to steer the university towards strategic goals.

Unlike *Universidad de Chile*, which comes from a tradition of almost independent schools, decentralization in *Pontificia Universidad Católica de Chile* (PUC) resulted from a deliberate effort to move away from centralization. Starting in the mid eighties, a new model was introduced that gave deans autonomy to manage their budgets and their human resources, create new programs, and raise funds. As a consequence of this transfer of power to the schools, some have made significant progress toward the habits of academic work typical of a research university, while others continue to maintain a traditional teaching profile.

*Universidad de Santiago* (USACH) has also embarked in a process of administrative and financial decentralization, to give its schools more room and better incentives to generate resources through consulting, continuing education

and graduate programs.

A second governance feature, present in all universities introduced here, with the exception of *Pontificia Universidad Católica de Chile*, is that school deans and department heads are elected by their peers. Elected officials are generally not able or willing to introduce necessary, but unpopular measures with regard to their colleagues' work. Department chairs and deans are usually beholden to their constituencies, and if these are not researchers, then research suffers. This is, in part, why the rules governing the composition of professors' workloads emphasize teaching over research: many tenured professors are not capable of research. The feasibility of a more incisive enforcement of research productivity is met with skepticism by administrators, who don't think it would be very effective because of the conflict avoidance mentality that prevails among elected department chairs and deans.

### **The difficult transition from a staff of teachers to a research faculty**

Recruitment of new faculty tends to work in the opposite, pro-research direction. There is a certain convergence of the academic units in seeking doctorates in new hires, a standard introduced due to greater availability of young people with Ph.D.s, the requirements for the accreditation of doctoral programs, considerations of academic prestige, inter-institutional comparisons, performance indicators-based funding, and reputation rankings, about which more will be said in the following section.

This difference in expectations about the credentials and work of senior and younger academic staff creates a sort of "generational gap", which contributes as well to the variability of research outlook across units in the same institution: In the fields of natural science, the doctorate has been already for a generation a requirement for membership in academia. In other disciplines, and in the professions, it is increasingly considered as the earliest step in a junior faculty's career. Large numbers of professors with non-terminal degrees, however, who were hired before universities took a research orientation in the eighties, will most likely remain in the social sciences, the humanities, the arts and the professional schools (Law, Architecture, Social Work, Education, and the like) until retirement.

At *Universidad de Santiago* (USACH), for instance, there still remain among the senior faculty many who were originally trained as school teachers in science. They continue to be terrific teachers to date, a dean points out, but have never in their careers, nor will they in the future, engage in research. Indeed, research is new in USACH. It started in 1971, trailing *Pontificia Universidad Católica de Chile*, *Universidad de Chile* and *Universidad de Concepción* by several years, and then mostly

in the form of graduate training for the faculty. But it developed rapidly: In 1990 USACH was seventh in research nationally. Today, it ranks in fourth place. The rapid development of a research mission has divided the faculty functionally into two generational groups: older faculty are mostly devoted to teaching, while researchers are mostly found among younger faculty. The Physics department, for instance, started to hire young Ph.D.s in 1990. It now has some 20 young faculty which give the department a strong research profile. USACH had 606 full-time faculty in 2003 (Table N° 1), of which, according to a USACH authority, 50 or 60 are highly productive in research, and other 60 to 80, only moderately productive. They are the ones who pull the research cart forward, and are behind the institutions' ISI publications and externally funded research projects.

Also of relevance is the rather expedite manner in which faculty acquire permanency of employment, especially in public institutions like *Universidad de Chile* (UCH) and *Universidad de Santiago* (USACH). The U.S. notion of tenure is not a concept one finds in Chile. Yet, the fact that public universities cannot fire their staff without a legal cause, and that other universities, free to regulate this matter as they see fit, have established in their statutes and bylaws a similar right for their academics, creates a status equivalent to tenure. It is, however, necessary to distinguish two concepts of tenure here: what I shall call a) "civil service" type tenure is the right to permanency of employment, barring suppression of the position, or dismissal for moral turpitude or criminal behavior, declared as a result of a formal inquiry; b) "academic" type tenure adds, to the aforementioned limits to permanency of employment, unsatisfactory academic performance declared as a result of a process of performance evaluation.

All four research-oriented universities for which we have data (*Universidad de Chile*, *Pontificia Universidad Católica de Chile*, *Universidad de Santiago*, and *Universidad Austral*) offer tenure to their professors. *Pontificia Universidad Católica de Chile* (PUC) offers academic tenure only for professors at the two highest ranks, but in the others, a professor can get tenure at any faculty rank. *Universidad de Chile* (UCH) is in a somewhat intermediate position between academic and civil service type of tenure. Although its General Code of Academic Evaluation contemplates poor performance as grounds for dismissal, it is unclear if this provision is actually enforced. In any case, UCH grants tenure to professors with indefinite appointments regardless of category or rank, but often uses a probationary, short, tenure-track first appointment. U. Austral grants civil service-type of tenure after a two year probationary period, during which the new professor, in any rank, has a fixed-term contract. *Universidad de Santiago* (USACH) gives civil service-type tenure with the first appointment. Additionally, there is no fatal ("up or out") time-

in-rank limit for faculty in the lower rungs, except in PUC. In other words, someone can be a tenured assistant professor for life.

The problem of a too quick path to tenure is compounded in UCH and USACH by the absence of a mandatory retirement policy. University regulations do not consider reaching retirement age (65 for men, 60 for women) as a cause for tenure to cease, and there is no incentive to retire voluntarily either, because of the enormous drop in income that would accrue. A few Faculties, like Physical and Mathematical Sciences (Engineering) in UCH, force people to quit at 65 out of sheer peer pressure, but the law protects those who don't want to retire.

Retirement is mandatory at age 65 in PUC, i.e., faculty are offered in exchange for their resignation a compensation equal to what their severance pay would be in case of unilateral termination of their contracts. Extensions up to age 70 have to be approved by the Faculty Council, and by the Superior Council beyond 70. In general, senior faculty choose to retire, and many of them later find employment in new private universities. At PUC all faculty appointments carry a 10% tax on the salary, that goes into a university-wide severance fund, the purpose of which is for academic and administrative units to avoid getting stuck for want of severance money with people they wish to dismiss. This fund has been a key enabler of PUC's strict enforcement of productivity standards, and of its mandatory retirement policy (Koljatic 1999: 356).

Salary policy also favors a diversity of faculty profiles. While base-level salaries are generally commensurate with average private-sector professional wages for equivalent qualifications, and are, thus, generally sufficient to support a modest middle-class lifestyle without the need for a second job, universities offer numerous forms of variable salary, connected to extra teaching, consulting, or research. And even for those who are not inclined to or capable of benefiting from these extra funds, there is always the possibility of part-time teaching at private universities.

Several universities with rigid and-for young Ph.D.s conscious of their new value-unattractive salary scales connected to academic rank, have devised systems of appointments which are parallel to the regular tenured and tenure-track paths, just to make it possible to pay new faculty with doctorates salaries above the level prescribed for a junior faculty in the rank-based salary scale.

With regard to base salary, however, it is important to point out that in all universities visited, except for *Universidad de Santiago*, the basic salary of professors considers some measure of opportunity cost (what the professor would make outside of the university), either directly, in U. Austral and *Universidad de Chile*, or potentially, as in *Pontificia Universidad Católica de Chile's* autonomy of academic

units to establish salary policy. This constitutes an institutionalized acknowledgement of the influence of the professional market on faculty salary, whereby it becomes legitimate for a professor of Economics or Law to earn more than a professor of equal rank in, say, History or Philosophy. As such, it constitutes a radical departure from the ideology of equal salary for equal rank prevalent in Latin American public universities. There remains, however, a notion of same function, same salary, only that now the claim is defended by faculty only for salary equalization within a school. Salary differentials across schools within the same university are mostly assumed as a (hard) fact of life.

The abundance of incentive schemes provides for an intriguing contrast with the paucity of evaluation mentioned above. When it comes to stimulating performance among professors, Chilean research-oriented universities seem more prone to the carrot than the stick. They all have internal competitive research funds intended to prepare researchers for, or to complement, FONDECYT, the national research grants program. Another common policy related to research is to pay monetary bonuses or otherwise reward publications in the mainstream scientific literature (usually defined as journals indexed by ISI).

Salary supplements tied to good overall performance are offered at *Universidad de Santiago* and *Pontificia Universidad Católica de Chile* (PUC). In every case, to be eligible faculty have to also pledge “exclusivity.” Exclusivity bans teaching at other universities generally, but it is essentially aimed at curbing part-time teaching in privates. Exclusivity was created by PUC in the late eighties, and once PUC, by setting the example, made it legitimate to curb part-time teaching among full-time faculty, other universities with the financial clout to offer more salary in exchange for exclusive dedication followed suit.<sup>8</sup> In *Universidad de Santiago* one of the requirements to obtain the “excellence in teaching,” or the “excellence in research” salary bonuses is to sign an affidavit relinquishing outside teaching. *Universidad de Chile* demands no exclusive dedication from its faculty. Freedom of work and lack of incentive money to back up a prohibition are cited as reasons. UCH tried a policy of exclusivity briefly, with a salary bonus, but it didn’t work, because the ones the university most wanted to have were too expensive to keep in the university full-time anyway. Ideology (mixed with self-interest) also plays a role: some believe that professors at tax-funded public universities have to be freely available to disseminate knowledge in society beyond the walls of their university. Others argue that control of products is better than control of time, and that, therefore, a tight performance evaluation should suffice to ensure productivity.

Salary policy has become a crude but effective tool for accountability. It

drives home the point that professors are not exempt from showing results in exchange for their salary. Several officials pointed out that the emergence of private universities, where the relationship between work and salary is generally regarded as close and unambiguous, has helped reinforce the notion that salary is the retribution for work, and better salary is due to those who work more.

In general, an upgrade of the qualifications of faculty in the entire university is still several years away in these four institutions. In some professional schools, moreover, it is unclear whether the universities will totally replace their professional practitioners with academicians, given that the training in professional skills and familiarity with the professional markets is so much part of the mission of these schools, and is also what students demand. Most leaders of professional schools I interviewed would be happier with a mix of academics with Ph.D.s and a research portfolio, and practitioners active in their professional markets who teach part-time, rather than with just full-time researchers.

In sum, for reasons of decentralized governance that allow schools with different degrees of commitment to science to coexist under the same roof, weak university-wide expectations and requirements for faculty members' research productivity, or lack of generalized enforcement of such expectations and requirements where they exist, rapid access to a tenure system which offers little chance to monitor a tenured professor's accomplishments over time, or to act upon such evaluation, salary and workload policies that accommodate the interests of research and non-research faculty alike, the permanence in campuses across the nation of a generation of professors who reached tenure without a doctorate, or a research track-record, who don't engage in research, and are unlikely to retire voluntarily to open space for research-trained and oriented younger colleagues, and, finally, because of the training demands of professional education, a dedication to knowledge creation is unevenly rooted across schools in the most-research oriented universities in Chile. Therefore, one cannot, in light of the ideal type of a research university proposed here, regard Chilean institutions as research universities. What some Chilean universities do have, however, are research schools, or departments, or centers, as islands of scientific accomplishment within universities that are striving, with more or less emphasis and urgency, to mold the whole of the institution after the research-centered organization and culture of their research units.

From this present, what is the outlook for research oriented universities in Chile? Will there be a Chilean research university in the near future? In pondering these questions we only have the past to go by, and the overall trend of the last 20 years looks generally auspicious. To this trajectory and its possible projections I

turn in the following, and last section of this chapter.

### **The rise of research in Chile**

The military government in power in Chile between 1973 and 1990 was bad news for universities. They were intervened through military rectors who assumed all governance functions, repression was unleashed against faculty, students, and administrative personnel, and entire fields, like sociology, political science, anthropology, and political economy were practically wiped out from the university. Institutional autonomy, freedom of speech, academic freedom, and pluralism disappeared; the structural and governance reforms of the late sixties were abolished, and the university was put under permanent surveillance (Brunner 1986:41-46).

Public spending in higher education decreased between 15 and 35%, depending on the estimate, between 1974 and 1980. Universities were required to abandon gratuity and to charge tuition, and to seek other outside sources of funding. Self-financing in Chilean universities grew from 13.5% to 26.9%, average, between 1965 and 1980 (Brunner 1986:46-47).

Drastic economic reforms brought years of socially painful adjustment to a new political economy where the engine of growth was no longer the state, but the exports-led private sector, until Chile's economy took off in the mid eighties, beginning what twenty years later is widely regarded as one of the most spectacular recent periods of steep and sustained economic growth of a developing country anywhere outside of Asia. The size of the Chilean economy tripled, purchasing power-adjusted per capita income reached close to US\$10,000, poverty was cut by half, and extreme poverty was reduced to single digits. The return to democracy in 1990 brought freedom and political stability, while leaving the legacy of economic reforms largely untouched.

Higher education took the same path as the economy: the system was privatized and de-regulated, and competition imposed upon its institutions as the only possible strategy for survival. Twenty years after the Chilean higher education was reformed, "privateness" has come to be its dominant feature, with the private sector representing 93% of institutions, and 70% of enrollments. Funding has also been privatized, with non-public sources accounting for some 3/4 of the total national expenditures in higher education. These figures set Chile among the world's leaders in the extent of private participation in tertiary education.

This hardly seems a fitting scenario for science to blossom. Yet, between 1979 and 1990, the year of Chile's return to democracy, public funding for research

and development increased by 30% in real terms, numbers of ISI publications doubled, and faculty with graduate degrees tripled.<sup>9</sup> This is partly a result of research having being largely spared from the budgetary cuts for higher education decreed in the eighties by the military government of Gen. Pinochet.

Since 1990, the democratic governments have continued to expand funding for research, doubling public expenditures in R&D between 1990 and 2002, while overall funding (public, private and international) also increased in the same proportion over that span. In the two and a half decades from 1979 and 2002 overall expenditures in R&D grew almost five-fold<sup>10</sup> (Table N<sup>o</sup> 2).

Table N<sup>o</sup> 2. Publications, faculty with graduate degrees and R&D expenditures in universities, Chile: 1979-2002

Year	Number of publications ISI	Expenditures in R&D		Cost per publication		Faculty with graduate degrees FTE	Productivity of faculty with graduate degrees (FwGD)	
		Millions of 2003 pesos	Mill. US\$	Millions of 2003 pesos	Thousands US\$		Publications / FwGD	FwGD/ publications
1979	427	26,548	31.0	62.2	72.64	1,021	0.42	2.39
85	657	40,414	38.7	61.5	58.91	2,408	0.27	3.67
90	878	58,754	71.9	66.9	81.92	3,353	0.26	3.82
95	1,166	91,256	164.1	78.3	140.74	4,395	0.27	3.77
2000	1,583	107,665	183.0	68.0	115.60	5,634	0.28	3.56
2001	1,684	107,862	161.3	64.1	95.82	5,974	0.28	3.55
2002	1,751	115,050	162.5	65.7	92.81	6,234	0.28	3.56

Source: *Indicadores*, CONICYT, Santiago de Chile; Thomson-ISI (Institute for Scientific Information).

Faculty productivity, however, remains rather low, at one-fourth of an article per faculty with Ph.D. per year. Our previous discussion about uneven research productivity across schools and institutions is also pertinent here, with the added proviso that publishing in English and in indexed outlets remains alien to the scientific communication tradition of vast areas of knowledge in Chile, so that this measure of productivity leaves out much of what is produced in the social sciences, the humanities, and the arts.

And as research develops with government support, so do graduate programs. Enrollments of only 2,000 students in graduate programs offered in Chile in 1983 have increased to close to 12,000 in 2001. While at the beginning of

the eighties doctoral programs offered by Chilean universities were concentrated in a few universities and almost exclusively in the natural sciences and the humanities, the nineties has been the decade of the expansion of these programs. From 80 doctoral programs offered in Chile in 1999, 126 were available in 2004. In the same period students have gone up from 1,144 to 2,237, while doctoral graduates, numbering 75 in 1999, reached 238 in 2004. The latter figure represents 15 doctoral graduates per million inhabitants, a figure higher than that of Argentina and Mexico, but lower than Brazil's (Reich, 2005).

Graduate degrees among faculty are increasing too: in 1965, the most advanced university in this respect, the University of Chile, had 12% of its faculty with graduate degrees (master or doctorate). In 1985, 22% of faculty in Chilean universities had graduate degrees, according to census data (Brunner 1986:112). A similar figure (18%) is reported from a survey in the study of the academic profession in 14 countries, including Chile,<sup>11</sup> that was carried out by the Carnegie Foundation for the Advancement of Teaching, and for which data for Chile were collected in 1991 and 1993 (Boyer et al. 1994, Schiefelbein 1996:286). The latest census figures for degrees earned among the faculty of all universities, public and private, shows that the proportion of faculty with graduate degrees (masters and doctorates, since no separate figure exists for doctorates only) in universities had climbed to 38% by 2004.<sup>12</sup>

Another glimpse into these trends, this time at the institutional level, can be obtained from examining publication output in recent years across the five research-oriented universities of Chile. *Universidad de Chile* went from 516 ISI articles in 1998 to 855 in 2003, while *Pontificia Universidad Católica de Chile*, in the same period, increased from 303 to 529. *Universidad de Concepción*, with less than a dozen articles in 1999, registered 346 in 2003. *Universidad de Santiago* almost doubled its output in the four years starting in 2000.

Even though no research universities exist in Chile,<sup>13</sup> the ones considered here and many others have embraced, in rhetoric if not entirely in practice, a research orientation as their main pathway to national primacy and, eventually, world class distinction. Reasons for this shift towards a scientific mission include well-known global factors, such as the emergence of the knowledge economy, or the reception in Chile, as in the rest of the world, of the influence of the U.S. research university model.

There are also indigenous developments, which include a sustained government policy of strong incentives to research productivity, the emergence of rankings and classifications of Chilean universities, also modeled after the US's, the rise of the full-time research scholar as the archetype of the faculty member, and,

more recently, the widespread dissemination of the idea that training at the doctoral level and research are essential to improve Chile's competitiveness in the world economy. I shall briefly describe these local stimuli for research.

As I explained before, CONICYT, the National Council for Scientific and Technological Research, is the main public funding agency for research. Between 1990 and 2002, CONICYT's budget increased fourfold, reaching the equivalent to US\$ 71 millions, which represent 18% of overall higher education expenditures by the government. Direct funding for research and doctoral programs have not been the sole means for fostering the universities' research missions. Additionally, the government allocates 5% of the bulk subsidy to universities based on the basis of performance indicators. The indicators mostly reward high graduate enrollments, faculty with graduate degrees, externally funded research projects, and ISI articles.

Another area of higher education public policy with heavy impact on research is the accreditation of graduate programs, done by a public accrediting agency. It also requires faculty with doctorates, indexed publications and FONDECYT projects. Accreditation is needed for graduate students to be eligible for government scholarships. As with the 5% indicators, the relatively narrow scope of accreditation has expanded its reach so as to permeate the whole system with its standards of good practice.

In sum, public policy created markets for research, publications, and graduate degrees where there wasn't much of a demand for them. The policy instruments used reinforced each other by coherently rewarding the same things: doctoral degrees, full-time contracts, research, and publications. It was not long until universities started replicating these instruments in their own internal policies, so as to align their results with those rewarded by the government, and thus enter in a virtuous circle of incentives.

If these governmental messages were not enough, there is an official guide of universities and programs for higher education applicants, called indices, and the unofficial rankings prepared for massive consumption by the news media. They too count and publish the numbers of faculty with graduate degrees, faculty who are full time, numbers of indexed publications, and FONDECYT research projects.

ISI indexes have been criticized for under representing scholarly production from outside the U.S., and especially, research generated in developing countries and published in languages other than English (Altbach 2002:6-7). The university research directors I interviewed showed awareness of these criticisms, as well as of the tradition of publishing in local outlets prevailing in the social sciences, the humanities and the professions, and were willing to accommodate them. Yet, in

great measure as a result of its financial consequences, they were determined to press ahead for ISI publications. Consequently, publication in the mainstream international literature is increasingly becoming the most recognized way to publish, and not only in institutions whose funding depends on it. As with full-time faculty, externally funded competitive research, and graduate degrees, ISI publications have become institutionalized as markers of academic rigor and success throughout the university system. What started as a set of standards imposed by the funding policies of the government, has become a system wide institutional norm, the proper way of doing things.

In a similar process of institutionalization, the idea of an academic as a successful practitioner in a profession who taught part time has been effectively replaced by a new golden standard: an academic is a researcher with a doctorate, a full-time commitment to her university, and a demonstrated capability to obtain research grants and publish in the international mainstream literature. Moreover, these research faculty have acquired an increasingly stronger voice and influence over their institution's and the government's policies for resource allocation. What started as a supply-side effort, so to speak, to create a research capacity in universities, seems now to be turning into a demand driven cycle of increased resources and instruments to make resources available for research.

Over the past ten years a labor market has evolved, where the monetary value of the services of professors of different backgrounds and fields can be readily ascertained, and invoked to shape compensation policy. As a result of the development of "prices," greater mobility of human resources ensued. The need to deal with other opportunities an academic may have appears increasingly more pressing. Universities where salary policy ignores this notion are permanently struggling to recruit and maintain qualified faculty in high income fields.

Requirements for joining the academic career have inched upwards as the quality of applicants rise. There is increased interest in graduate studies among young people. Accordingly, the last decade has seen a sizable expansion of the number of people with doctorates in all disciplines and in the professions, from Biology to Mathematics, from Law to Journalism. At the same time as credentials improve, full-time academic work, long the only form of academic work in the natural sciences in Chile, is permeating such traditional redoubts of part-time teaching by successful practitioners as the schools of Law and Engineering.

Finally, there is little doubt in the Chilean scientific community, and in the government, that incrementing qualified human resources, strengthening the countries' scientific base, and working closer to the business sector, are essential to transform Chile's economy in tune with the demands of the knowledge society.

Accordingly, scientific research is "marketed" by its constituencies to the larger community as a booster for competitiveness. This is the thinking behind, for instance, the latest World Bank science and technology project in Chile, for US\$ 100 million. These funds would increase CONICYT's budget by 25% annually, for six years, to be invested in research programs, doctoral training, and postdoctoral internships in industries. The goals are to reach 400 doctoral degrees granted annually in 2010, and 800 in 2015, to increase the proportion of full-time faculty with doctoral degrees to 50% of the staff in research-oriented universities, to foster the incorporation of Ph.D.s in the industry, and increase the share of private sector funding in research and development.

This "mode 2" perspective, of knowledge for economic advantage (Gibbons et al. 1994, Etzkowitz and Leydesdorff, 2000), may represent an impoverishment of the mission of the university, considering that it leaves behind goals so dear to the Latin American idea of the university as fostering new power structures, performing the role of society's critical consciousness, deepening democracy, extending high culture to the masses, and the like. But it offers the university two considerable benefits: first, it provides an extremely effective case for the need of vigorous science even in peripheral countries unlikely to ever become scientific powerhouses; second, it serves to fill with a transcendent sense of purpose the life of an institution that after the meltdown in the seventies and eighties, in Chile and elsewhere in Latin America, of the social transformation agenda represented by the elevated goals recounted above, has had to justify itself on grounds of its most immediate, and rather inglorious products (professionals trained, concerts staged, national treasures saved from neglect or oblivion, and the like) rather than on a grand discourse of social progress or redemption. Knowledge for competitiveness puts the university back in the company of the national actors in whose hands the fate of the nation is molded.

### **Conclusions**

I have argued that there are no research universities in Chile, notwithstanding the great impulse to scientific research since the mid eighties. Unlike some Asian nations, the government in Chile chose not to single out one or two institutions to concentrate research resources on them, allowing instead open competition for research grants and funding for doctoral students across the board. The strategy has been, and will continue to be for the foreseeable future, one of generalized support for research across institutions, with relatively more resources flowing to the handful of the most competitive universities. Over time, this strategy has

helped a few universities get closer to the research university ideal, but as Chile's economy continues to grow, the question of the future possibility of a research university becomes more pressing. What is still to be done to get there?

One limitation is funding. Chile invests 0.6% of its GDP in research and development, at a rate of US\$ 29 per capita, lower than Brazil's and Argentina's comparable figures. The World Bank estimates that this level of investment ought to double to match Chile's economic outlook. Moreover, private investment in this area is only 22% of the total, whereas it reaches 40% in Brazil and 69% in the U.S. (World Bank, 2004:10).

Chile's research-oriented universities need to complete their transitions from the legacy of the full-time teaching staff, or the faculty member who is a successful professional practitioner who teaches part-time, to the full-time, research trained scholar. (Of course, there will still be space for practitioners in the clinical, or practical curriculum of the professions.) To achieve this goal, doctoral training in Chile will need to expand substantially, as planned by the government, and universities will have to be assisted financially to offer their faculty in retirement age attractive compensation packages.

Universities could also help by strengthening their regulations for faculty productivity, or enforcing them if they already have them in the books, by granting tenure only to those who have shown capacity to do research, and by continuing to monitor a tenured professor's accomplishments over time.

On the positive side of the ledger, Chile's universities can rely on their capacity to adapt to new environments--honed after 30 years of change in the political economy of national higher education, their low level of politization, and their near monopoly over research in the country (since there are only a few major research institutes outside the universities in Chile).

The majority of Chilean universities, however, are far removed from these concerns. For them, public and private, research is either the province of a small group of faculty members, or a sporadic activity, or a completely alien one. The majority of private universities fit in the latter category. They are teaching institutions with no qualified, dedicated faculty hired to carry out research. But there is an intermediate group of some 20 universities, including two or three private ones, where a few nuclei of active researchers can be found. The rationale for sustaining this effort is not connected to any plan to become a research university, which would be unreasonable but for the longest term. It has to do, in part, with the prestige associated with scientific accomplishment (reflected, as I explained, in rankings, among other forms of recognition). It derives also from the enormous modeling power of the research university ideal, which although

impossible for most universities to be enacted whole, at least calls for some form of symbolic representation. Finally, there are some leaders in universities self-described as teaching institutions who nonetheless consider some research to be necessary for students to be educated in an atmosphere of critical inquiry, where at least some of the faculty can show their students what it is like to work at the knowledge frontier. In this rationale, research is not sought mainly for the sake of generating results, but chiefly as an enrichment to education. An inspiration that somehow reminds us of Humboldt's idea of a research university.

### References

- Altbach, P. G. (Ed.) (2002). *The Decline of the Guru: The Academic Profession in Developing and Middle-Income Countries*. Chestnut Hill, MA: Center for International Higher Education, Boston College.
- Bernasconi, A. (2005). University entrepreneurship in a developing country: the case of the P. Universidad Católica de Chile: 1985-2000. *Higher Education* 50(2), pp. 247-274.
- Bernasconi, A. (2003). *Organizational diversity in Chilean higher education: faculty regimes in private and public universities*. Unpublished doctoral dissertation. Boston University.
- Braxton, J. M. (1993). Selectivity and Rigor in Research Universities. *Journal of Higher Education* 64(6), pp. 657-675.
- Brunner, J.J., Elaqua, G., Tillet, A., Bonnefoy, J., González, S., et al. (2005). *Guiar el Mercado. Informe sobre la educación superior en Chile*. Working paper, Universidad Adolfo Ibáñez, Escuela de Gobierno, March 2005.
- Boyer, E. L., P. G. Altbach, & M. J. Whitelaw. (1994). *The Academic Profession. An International Perspective*. Princeton, N.J.: The Carnegie Foundation for the Advancement of Teaching.
- Clark, B. R. (2004). *Sustaining Change in Universities. Continuities in case studies and concepts*. Maidenhead: Society of Research into Higher Education and Open University Press.
- CONICYT (Consejo Nacional de Investigación Científica y Tecnológica). (2000). *Programa FONDECY: Impacto y desarrollo 1981-2000*. Santiago: CONICYT.
- Consejo de Rectores de las Universidades Chilenas. (2000). *Anuario Estadístico*. Santiago: CRUCh.
- Consejo de Rectores de las Universidades Chilenas. (1992). *Anuario Estadístico*. Santiago: CRUCh.
- Consejo de Rectores de las Universidades Chilenas. (1990). *Anuario Estadístico*. Santiago: CRUCh.

- Consejo de Rectores de las Universidades Chilenas. (1985). *Anuario Estadístico*. Santiago: CRUCh.
- Corporación de Promoción Universitaria. (1987). *El desarrollo científico y tecnológico en Chile. Un análisis cualitativo 1965-1985*. Santiago de Chile: Corporación de Promoción Universitaria.
- El Mercurio. (2004). *Revista El Sábado* N° 322, November 20th., 2004.
- Etzkowitz, H. & L. Leydesdorff. (2000). The dynamics of innovation: from National Systems and 'Mode 2' to a Triple Helix of university-industry-government relations. *Research Policy* 29(2), pp. 109-123.
- Geiger, R. (1986). *To Advance Knowledge: The Growth of American Research Universities, 1900-1940*. New York: Oxford University Press.
- Geiger, R. (1985). After the Emergence: Voluntary Support and the Building of American Research Universities. *History of Education Quarterly* 25(3), pp. 369-381.
- Goodchild, L. F. (1991). What is the condition of American research universities? *American Educational Research Journal* 28(1), pp. 3-17.
- Jencks, C., & D. Riesman. (1968). *The Academic Revolution*. Garden City: Doubleday.
- Koljatic, M. (1999). Utilidades, orientación al mercado y descentralización: "nuevas" ideas para la administración universitaria en Latinoamérica. *Estudios Públicos* 73, Verano. Santiago de Chile: Centro de Estudios Públicos, pp. 335-358.
- Krauskopf, M. (1999). Los doctorados en Chile. Perfil y capacidad científica de los programas de ciencias acreditados en Chile. *Estudios Públicos* 76, Primavera, Santiago de Chile: Centro de Estudios Públicos, pp. 359-408.
- Krauskopf, M. (1993). *La investigación universitaria en Chile: Reflexiones críticas*. Santiago de Chile: Corporación de Promoción Universitaria.
- Levy, D. C. (1986). *Higher Education and the State in Latin America: Private Challenges to Public Dominance*. Chicago: University of Chicago Press.
- Levy, D. C., & A. Bernasconi (1998). University of Chile. *International Dictionary of University Histories*. Carol Summerfield and Mary Elizabeth Levine (Eds.). Chicago: Fitzroy Dearborn Publishers.
- Qué Pasa. (2004). *Ranking de Universidades*. Santiago de Chile: Consorcio Periodístico de Chile, SA. November.
- Reich, R. (2005). Postgrado en Chile. *Informativo MECESUP* N ° 294. Santiago: Ministerio de Educación, Programa MECESUP.
- Schiefelbein, E. 1996. The Chilean Academic Profession: Six Policy Issues. P. G. Altbach (Ed.) *The international academic profession: Portraits of fourteen*

- countries*. Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching.
- Serrano, S. (1994). *Universidad y Nación: Chile en el siglo XIX*. Santiago de Chile: Editorial Universitaria.
- Thelin, J. R. (2004). *A History of American Higher Education*. Baltimore: The Johns Hopkins University Press.
- UNICAMP (n.d). *Informaciones*. Campinas: Universidade Estadual de Campinas.
- Weber, M. (1949). *The Methodology of the Social Sciences*. New York: The Free Press.
- World Bank. (2004). *Chile: New Economy Study*. Report N° 256666-CL. Vol 1. Washington D.C.: The World Bank, Finance, Private Sector and Infrastructure, Latin America and Caribbean Region.

## Notes

---

<sup>1</sup>Indeed, I couldn't find one incidence of the phrase "research university" in a report on scientific development goals and results in Chile, covering the period from 1965 to 1985, published in 1987 under the auspices of the Chilean Academy of Sciences (Corporación de Promoción Universitaria, 1987). Yet, just six years later, another study of the status of research in Chile appeared (Krauskopf, 1993) in which the author, after referring to the case of research universities in the US, and looking back to the situation in Chile, would say: "... it becomes increasingly difficult to share in the progress of the most advanced nations, without strengthening in our country a significant number of universities genuinely committed to research" (p. 32), while the book's Chapter 5 (pp. 133-152) bore the telling title "Research universities: a challenge." A slightly earlier occurrence of the name "research university" in Chile appears in a 1992 book by Mario Letelier, cited by Krauskopf (1993, p. 135).

<sup>2</sup> Actually, I used the truncated form *universit\**.

<sup>3</sup> Of course, several caveats are in order. First, ISI-indexed articles do not exhaust published research. Aside from books, there are also articles not covered in ISI, typically those in outlets published in languages other than English, and outside of the US, the British Commonwealth and Continental Europe.

<sup>4</sup> The website of the *League of European Research Universities* (LERU), in <http://www.leru.org/?cGFnZT0x>, retrieved May 17, 2005.

<sup>5</sup> The website of *Innovative Research Universities*, Australia, in <http://www.irua.edu.au>, retrieved May 17, 2005.

---

<sup>6</sup> Which makes it possible, among other things, to increase scientific output, as illustrated by the cases of top Chinese universities, where more than half of the first authors of academic publications are graduate students (Liu, in this volume).

<sup>7</sup> A semantic note is necessary here: the larger academic units in Chilean and Latin American universities are called *facultades*, which roughly correspond to U.S. schools. I shall use the English word School to refer to *facultades*, to avoid confusion with the word *faculty*, in spite of the fact that in Spanish university nomenclature, schools (*escuelas*) are the teaching units within *facultades*.

<sup>8</sup> An outright ban on outside work would be against the legal protection of the freedom of work, and is likely to meet fierce resistance by faculty who teach part-time at private universities.

<sup>9</sup> Data from CONICYT's Indicators of Science and Technology (Chile), in

<http://www.conicyt.cl/indicadores/gasto/nacional/xls/T1-5.xls>.

<sup>10</sup> Data from CONICYT's Indicators of Science and Technology (Chile),

<http://www.conicyt.cl/indicadores/gasto/nacional/xls/T1-6.xls>.

<sup>11</sup> Australia, Brazil, Chile, Germany, Hong Kong, Israel, Japan, Korea, Mexico, the Netherlands, Russia, Sweden, the United Kingdom and the United States.

<sup>12</sup> Data from *Consejo Superior de Educación's INDICES* database, year 2004.

<sup>13</sup> The Academic Ranking of World Universities published in 2004 by Shanghai Jiao Tong University placed *Universidad de Chile* in the 401th-450th range position as the sole Chilean university. No Chilean universities appeared in the Times Higher Education Supplement World University Rankings, the same year.