

# Threats and opportunities of science at a for-profit university in Chile

Javiera Barandiaran

Published online: 7 April 2011  
© Springer Science+Business Media B.V. 2011

**Abstract** Thirty years after pro-market policies were first adopted, how best to organize Chile's scientific enterprise remains as elusive as when universities were state-run and funded. This paper explores scientific research at a for-profit university, University Andres Bello, to ask if a new mode of knowledge production is in the making and with what impacts for Chilean universities. In contrast to trends described in the North American and European university literatures, the Chilean experience to date indicates that market competition reinforces existing scientific practice, including evaluation mechanisms. Its largest impact may instead lie in challenging cultural notions of a university's rights and responsibilities, with potentially negative consequences for existing state-run and non-profit universities. These findings are important for developing countries seeking to expand research without expanding public universities or expenditures, and raise important questions regarding the specific mechanisms that mediate between a university's forprofit business model and its research agenda.

**Keywords** Knowledge production · For-profit universities · Proprietary science · Chile

## Introduction

[Knowledge]can be financed by the State or the private sector; this does not determine the quality of knowledge.

Manuel Krauskopf, Vice-President of Research and Development for Laureate, Inc. and ex-Chancellor of Universidad Andres Bello (Krauskopf 2004b).

This paper explores the validity of Dr. Krauskopf's statement by examining the character and motivations for scientific research at the Universidad Andres Bello (UNAB), a for-

---

J. Barandiaran (✉)  
Department of Environmental Science Policy and Management, University of California,  
124 Giannini Hall, Berkeley, CA 94720, USA  
e-mail: jba@berkeley.edu

profit research university in Chile. Chile is a laboratory for policies for market reform and a test case for how well theories of science policy travel to developing countries. The literature from sociology, science studies and other disciplines, produced mostly in US and European universities, assumes that “academic and proprietary science represent distinct and contradictory institutional regimes” (Owen-Smith 2005, p. 64). As a result scholars have focused on the potential for conflicts of interest (Krimsky 2003), academic capitalism (Kleinman and Vallas 2005; Slaughter and Rhoades 2004), asymmetric convergence (Kleinman and Vallas 2005) and hybrid systems (Owen-Smith 2003). For-profit research universities are a small and still novel part of the growing private higher education market, making UNAB a harbinger of universities.<sup>1</sup> Is a hybrid system, with two distinct mechanisms for evaluating quality, also developing in Chile? What motivates a for-profit university to pursue research?

Relying on an analysis of UNAB documents, research projects, and interview materials, this paper argues that current scholarship does not anticipate patterns in UNAB’s research program nor elucidate Chilean debates on the social role of science. Three decades after the government opened the door to private capital in the university sector, a debate rages as to the “proper place” of the university, including questions about a university’s mission, responsibilities and rights, and how to achieve quality and equity, as evidenced by recent student and university mobilizations.<sup>2</sup> Countries seeking to expand university teaching and research without significant public expense want to know: does “organizational diversification” raise the quality, quantity or connectedness of research? “Organizational diversification” means the introduction of market mechanisms to (hypothetically) produce competition, raising quality and access. A common view in economics, some science studies scholars argue likewise; a market-exposed university will be more responsive to social demands (Nowotny et al. 2001). But not all scholars agree; markets threaten to turn Latin American universities into the “affiliate, branch or empty cage” for commercial endeavours of Northern knowledge institutions (Vessuri 2000, p. 206) or dismantle emblematic institutions (Jansen 2002).

The first part of the paper sets UNAB in context and outlines university reform implemented under General Pinochet’s dictatorship (1973–1990). This sets the stage for a comparison in Sects. “Origins of and stratification in Chile’s university “market”” and “Epistemic consequences of for-profit/non-profit differences” of the epistemic and political intentions of UNAB’s research program. Section “Political consequences of UNAB’s for-profitness” reflects on the opportunities and limitations of research on universities in Chile. This study finds that “organizational diversification” reinforces existing scientific practices but challenges cultural notions of a university’s rights and responsibilities, threatening to dismantle emblematic institutions without transforming scientific practice.

<sup>1</sup> In Chile Universities Santo Tomás and San Sebastián seem to follow UNAB’s example. However, the private higher education sector includes institutions ranging from professional training, to online learning and business-driven universities (Geiger (2004). *Knowledge and Money: research universities and the paradox of the marketplace*. Stanford, Stanford University Press, Kirp (2003). *Shakespeare, Einstein and the Bottom Line*. Cambridge, Harvard University Press.). Further research should examine if other countries are following Chile’s example of for-profit universities.

<sup>2</sup> In July 2010 the government backed down from a proposal equalizing access to subsidies for new universities following protests. A common criticism is the failure to recognize different legal and social constraints universities face. See [http://diario.latercera.com/2010/06/20/01/contenido/18\\_30359\\_9.shtml](http://diario.latercera.com/2010/06/20/01/contenido/18_30359_9.shtml); [http://www.uchile.cl/?\\_nfpb=true&\\_pageLabel=not&url=63414](http://www.uchile.cl/?_nfpb=true&_pageLabel=not&url=63414).

## University Andres Bello (UNAB)

With almost 30,000 students and an annual operating budget over US\$300 million, UNAB is one of the largest universities in Chile. In practice UNAB is a business (Bernasconi 2006; Monckeberg 2007; OECD 2009: 18). Chilean law requires all universities to be non-profit but many exploit legal loopholes to channel student tuition to corporate owners through real-estate agencies which acquire properties that are then leased to the university. UNAB consists of the Corporation UNAB (the university), Real Estate UNAB, and General Supplies S.A. (Abasa). Abasa buys properties, these are transferred to Real Estate, and rented to UNAB. In operation since UNAB's founding in 1988 by businessman Víctor Saleh, this business model remained intact in 1996 when business magnate Alvaro Saieh<sup>3</sup> bought UNAB, and in 2003 when Laureate Inc. bought UNAB for US\$70 million. Since 1988 businesspersons dominate the Board of Directors; property belongs to the real estate agency and is rented to the university; and stock owners have not changed significantly (Monckeberg 2007).

The state and business have a long history of shaping each other (Evans 1995; Ross Schneider 1999). In Chile, patterns of state access shaped business associations (Ross Schneider 2004) and liberal policies depended on supportive government-business coalitions (Silva 1996). Again, new universities are no exception and the university sector reflects shifting political coalitions. Not only is “private” used ambiguously to refer to for-profit and non-profit groups and to the privatization of previously public groups, but university “for-profitness” is taboo in Chile: as the OECD recommends, “it should be “proprietary science” and “science in a for-profit institution” in Chile and in the literature it is recognized that “for-profit universities exist” (OECD 2009: 165). There is ambiguity between “proprietary science” and “science in a for-profit institution”. Nonetheless, given UNAB's history a useful “first order approximation”<sup>4</sup> is to ascribe to UNAB a stable goal of for-profitness: it maximizes enrollments to generate income and justify continued physical expansion.

For a new university UNAB has many lower class students, and for a private university it has many research projects (Table 1). Research began at UNAB in 1996 following a crisis triggered by failing to be accredited. In total over this period UNAB researchers have won 94 Fondecyt projects, and the internal research budget has increased by more than 200% in 5 years, to half a million US dollars<sup>5</sup> (UNAB 2008).

### Aims of this study

This is a political analysis of UNAB's research program to assess whether scholars' predictions about science in a for-profit institution are observed and to reflect on the political consequences of “organizational diversification”. UNAB is but one player in Chile's education and science politics, and this paper raises just some issues within the larger discussion of the socially optimal level of research and its distribution across disciplines and institutions. Such an analysis requires data on the economics of research currently inexistent in Chile, where even enrollment numbers are contested (see OECD 2009, Monckeberg 2007).

<sup>3</sup> Owner of Corpbanca and media group Copesa. Several individuals linked to the Pinochet regime, like Juan Antonio Guzmán, ex-Minister of Education, and Miguel Angel Poduje Sapiain, ex-Minister of Housing and Vice President, also entered UNAB at this time.

<sup>4</sup> See Wynne (1992). “Representing Policy Constructions and Interests in SSK.” *Social Studies of Science* 22(3): 575–580.

<sup>5</sup> Includes direct research costs; excludes laboratory space, equipment, and staff costs.

**Table 1** University indicators for some Chilean Universities and UNAB

University	Type	Undergraduate students	% public school students	% Top students	Fondecyt research projects 2008
Chile	State	23,398	60.7	17	109
Catolica	Non-profit	18,699	35.3	17	72
Concepcion	Non-profit	19,462	85.0	12	47
Andres Bello	Private	22,000	66.7	4	8
Diego Portales	Private	9,673	45.9	10	5
Los Andes	Private	3,747	8.8	16	3
Alberto Hurtado	Private	2,017	68.2	8	3
Adolfo Ibanez	Private	5,214	11.4	19	2

Source: Elaborated from data from Monckeberg 2007

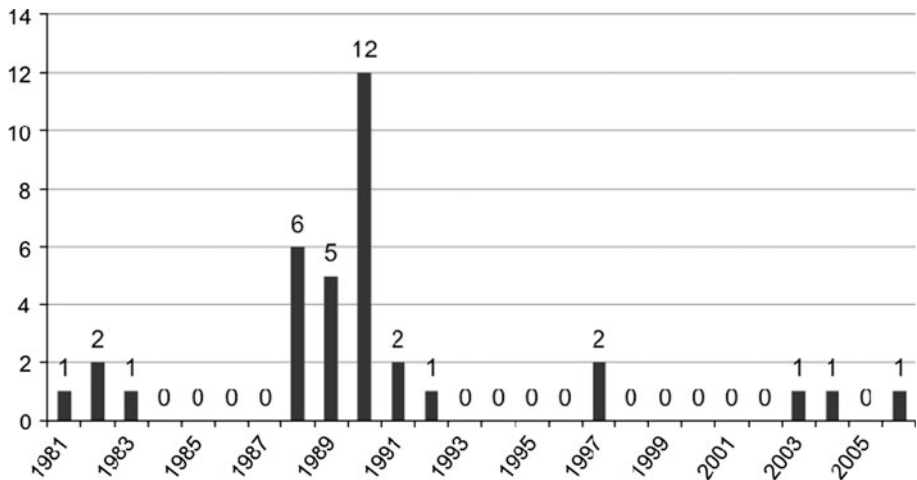
This paper questions some assumptions of economic analysis to contribute to improvements in that area of study.

Data were obtained from public sources—Monckeberg (2007), Conicyt, the National Accreditation Agency, UNAB, and the media—and complemented by interviews with local university and science scholars in July–August 2009. Data and interviews were in Spanish and translated by the author. The reported indicators are a novel contribution by the author. Social sciences were excluded because they account for a small part of Chile’s research effort and suffered stronger repression in 1973–1990. I focused on institutions’ intentions rather than the results of research because these are mediated by obstacles (access, language, bias) (see Lahsen 2004; Vessuri 2007).

### Origins of and stratification in Chile’s university “market”

The Higher Education Law of 1980, introduced nearly a decade of military intervention and reduced funding, downsized universities and lowered hurdles for the creation of private universities. Following Pinochet’s 1973 coup, 27,000 student places were eliminated from a high of 146,000, and approximately 25% of staff were expelled (Brunner 1986). Funding reached its lowest point in 1976. The 1980 law marks the distinction between “traditional” (largely state funded, pre-1980) and “new” (privately funded, post-1980) universities.

Supporters of reform argued competition would improve quality at no cost and increase “the freedom to choose education” (Bernasconi and Rojas 2004; Brunner 1986). In practice, and in contradiction to declarations that “the private sector responded rapidly” (Bernasconi 2006, p. 308; Brunner 1993), only four universities were created in the first few years after the reforms. Sixty-six percent of the 35 new universities still operating in 2007 (a few closed or merged after 1991) were created in the last 2 years of the Pinochet regime, 1988–1990, and half of these in the last 3 months of the regime (Fig. 1). Like UNAB, many new universities filled their Boards of Directors with individuals linked to the regime, conservative religious groups and the military (Table 2) (Bernasconi 2006; Monckeberg 2007). “For civil individuals that worked with Pinochet it was a strategic objective to destroy the University of Chile, the State Technical University and reduce the influence of some universities with a public vocation, like U. Concepción” (Monckeberg



**Fig. 1** Number of Universities created after 1980 Reform, by year of establishment

2007: 12). The new universities are an example of the state-business coalitions that sustained neoliberal reform in Chile (Silva 1996).

While the growth of new universities follows political events, the growth in enrollments is more gradual; about half of Chilean students study at a new university. Despite the rhetoric of a perfectly competitive market, traditional and new universities face very different market and legal conditions. The University of Chile, the flagship state university, is subject to administrative constraints unheard of in non-profit or new universities, and can not create new campuses, add new degrees or procure equipment as easily as the new universities.

Table 3 aggregates data for state-run universities (e.g., the University of Chile), non-profit universities (e.g., private traditional universities, such as P. Catholic University), and private universities (e.g., created after 1980, such as UNAB). Non-profit universities excel: they attract more top students (11%), have more books per student (24, compared to five in new universities), and do more research (20 projects per year compared to less than one in new universities) than the others. Non-profit universities enjoy the “best of both (state and private) worlds”. State-run universities attract more top students than new universities (8–3%), and, contrary to the demand-absorbing thesis (Bernasconi 2006; Levy 1986), offer more opportunities to low-income students than new universities: 88% of students in state universities come from public schools versus 60% of students at new universities.<sup>6</sup> While average data hides large variation—ranging from the tiny and elite U. Gabriela Mistral to the massive U. Las Americas—as a sector, private universities are far from equitably adding spaces for a growing population of students.<sup>7</sup>

<sup>6</sup> Lower income students includes those from municipal and subsidized schools, where the majority of Chileans go. Data for municipal and subsidized schools was summed because of the small n.

<sup>7</sup> Private university supporters claim the opposite: <http://www.elmostrador.cl/noticias/pais/2010/09/21/no-es-una-prioridad-invertir-recursos-millonarios-en-financiar-al-sector-universitario> <RefTarget Target-Type="URL" Address="http://www.elmostrador.cl/noticias/pais/2010/09/21/no-es-una-prioridad-invertir-recursos-millonarios-en-financiar-al-sector-universitario"/>".

**Table 2** Owners of post-1980 Universities still operating in 2006 (total: 35, some universities contain owners in more than one category)

Business	24
Politicians linked to Pinochet Government	10
Elite religious groups (Opus Dei, Legionaires of Christ)	5
Military	5
Academic groups	3
Jesuits, Salesians and traditional Catholic orders	3

Source: Elaborated from data from Monckeberg 2007

**Table 3** Characteristics of universities by type

	State universities	Non-profit universities	Private universities
Average students/university	8,520	10,231	5,640
Total students (% of total)	136,327 (31%)	92,082 (21%)	205,536 (47%)
% Poor students (students from public schools)	88%	79%	60%
% Top students (students bringing variable funding)	8%	11%	3%
Average library holdings/university	94,000	246,000	26,000
Books/students	11	24	5
Average Fondecyt projects/university	11	20	0.7

Source: Elaborated from data from Monckeberg 2007

### Epistemic consequences of for-profit/non-profit differences

While some scholars see limited opportunities for reconciliation between for- and non-profit science, others see opportunities for creating a new type of knowledge. For-profit and non-profit organizations differ with regards to the value they place on openness versus secrecy (Mowery 2005), on usefulness versus knowledge-for-its-own-sake (Nelson 2005; Stokes 1997), and on disciplinary boundaries (Nowotny et al. 2001). Some argue that as the distinction between for-profit and non-profit institutions is blurred, a new mode of knowledge production in which “research in the context of application” will prevail (Hessels and Van Lente 2008; Nowotny et al. 2001). What these scholars have in common is an attempt to delineate what science in a for-profit setting looks like in practice, and why.

#### Basic versus applied research interests

Most of the research conducted at UNAB is both use- and truth-inspired, falling into Pasteur’s Quadrant to use Stokes’ (1997) typology, as seen from researchers’ training, mission statements and news reports. Researchers have identified basic science questions they believe are relevant to the international science community and to local industry. Not only are the majority of projects funded through basic science programs, but in just over 40 (of 94) projects researchers claim to be contributing to basic research.<sup>8</sup> Of those that claim

<sup>8</sup> For example, three projects from 2009 are: (1) Topics On The Covariant Quantization Of The Superstring. (2) Theoretical Investigation Of Nanoscale Catalysts Based On Metallic Nanoparticles And Metallomacrocyclic Complexes. (3) Development Of Chemical Reactivity Models And Exploration Of The Chemical Bond Within The Context Of The Density Functional Theory.

an area of application, the most common are fish resources and mineral extraction, in line with Chile's economy and UNAB's interest in increasing exports. For example, the mission statements of three UNAB research centers read:

"We are ready to actively participate in Chile's great scientific and technological leap..."—Milenium Institute of Fundamental and Applied Biology.

"...the ultimate goal is to design and produce supramolecular structures to be used in converting chemical to solar energy..."—Milenium Nucleus on Molecular Engineering and Supramolecular Chemistry.

Objective #4: "Transfer the knowledge from basic research in plant biology to the fruit industry"—Milenium Nucleus in Plant and Cell Biology.

The centers quoted above employ PhD researchers. In contrast, CIMARQ is a UNAB research center which focuses on commercially-oriented research with funding from a collaborative of different industries. It does not employ PhD researchers, and its work largely falls into Edison's Quadrant (Stokes 1997), that is, use-inspired and relatively unconcerned with creating new theoretical knowledge. Finally, UNAB's internal application for research funds rewards originality, training, feasibility and capacity—not applicability or commercial impact.

This is not very different from Chile's broad research effort. Almost 50% of the Chilean National Science Foundation's (Conicyt) funding today supports research for economic competitiveness (Table 4). Considered the "bread and butter" of Chilean science and an indicator of prestige, Fondecyt has not benefited from recent increases in the science budget: it is 10% points smaller today than in 2004 relative to other programs, though Conicyt's budget in that time has doubled.<sup>9</sup> UNAB appears to assume it has no particular comparative advantage for producing use-inspired research, and competes with traditional universities for Fondecyt funds.

#### Openness/prestige and secrecy/profits

Collaboration, diffusion and openness are being promoted at UNAB. At least half of Conicyt projects are in collaboration with groups at other universities,<sup>10</sup> including many foreign universities. Only a few collaborate with industry. UNAB also promotes openness by funding attendance to scientific congresses, and appears to seek to invest in prestige. All but five of 32 researchers with Fondecyt projects in recent years had PhDs, eleven of these from abroad, in universities like the California Institute of Technology or University of Liege in Belgium. Though this is a tiny percentage of the total number of professors (2,510), the hiring of PhD trained scientists is clearly associated with research activity.

The strongest tension between openness and secrecy exists between the push to publish or patent. Chilean research universities, UNAB included, evaluate researchers and pay bonuses according to the number and impact of published articles. In August 2008 the

<sup>9</sup> Data are only available for some years. Between 2004 and 2007 Conicyt's budget increased 84% after already significant increases (see [www.conicyt.cl](http://www.conicyt.cl)). Other institutions, like the State Development Agency (Corfo), received significant increases to support research, specifically business innovation (from 2000 to 2006, gave out about US\$16.5 million in grants). In 2007 about US\$257 million was set aside for R&D. This is not much given Chile's low starting point, but funding has outpaced growth in active researchers. For existing universities and researchers, it is a challenge to maintain quality as resources increase so fast. To focus on "resource scarcity" thus may overlook how existing actors interpret their environment.

<sup>10</sup> Only projects where UNAB was lead institution were analyzed.

**Table 4** Committed CONICYT funds in 2007: total US\$169 million (expressed in 2007 US\$ by program, adjusted for inflation and using the average exchange rate of 522.47)

	US\$ (million)	% of total
Basic research		
Fondecyt	\$ 51.2	30
Fondap	\$ 9.6	6
Astronomía	\$ 1.1	>1
Applied/economic competitiveness research		
Bicentenario de Ciencia y Tecnología	\$ 37.1	22
Fondef (for technology development)	\$ 24.1	14
Financiamiento Basal (new funds for centers of excellence)	\$ 17.9	11
Regionales (regional funds)	\$ 4.7	3
Public outreach/diffusion and Scholarships		
Becas Nacionales Postgrado (scholarships)	\$ 16.5	10
Explora (public education)	\$ 6.4	4
Información Científica (journals, access to data bases)	\$ 0.3	>1
Relaciones Internacionales (foreign relations)	\$ 0.7	>1

Source: Elaborated from data on Conicyt website, [www.conicyt.cl](http://www.conicyt.cl)

UNAB approved an intellectual property policy statement: income is shared between the researchers (60%), the department where he/she is based (20%) and the University (20%). Though the policy recognizes that a conflict of interest exists between the researchers' interest to publish and the requirement to patent, no solution is proposed and important details are left open. The quotes below, from the University's policy, show this logic:

At the same time, knowledge is today the key source of economic development and of general progress in a country. Just as it is in the University's interest to strengthen the research and innovation of our professors and students, the university promotes the acquisition of rights over the products of research and its applications and, in general, the protection of intellectual property rights of the university and its professors, students and staff.

Members of the university community who, by virtue of their work at the university, have access to information about objects of intellectual property that may be economically valuable, must take the necessary steps to protect confidentiality of the research achieved or in process.

The Vice-Chancellor of Research is directed to prepare relevant secrecy and invention disclosure guidelines. Ex-ante agreements with third parties are required to prevent conflicts of interest, but these are managed by a committee appointed by the Chancellor, elected by the Board of Directors that is comprised of businesspersons and Laureate representatives. There appear to be no formal mechanisms for appointments to the Board, and in practice it has seen a rotation of businesspersons with longstanding family, friendship and business links to each other (Monckeberg 2007). Much like the traditional universities it competes with for research funds, UNAB pursues openness and prestige, evaluating professors on publishing counts while patents remain a secondary concern. As the government promotes patenting, it will be interesting to monitor changes to this policy



if patenting activity and value effectively increase. Contrary to expectations, as a for-profit university Andres Bello is for now following the norms of academic science.

#### Transdisciplinarity: context of application and openness to society

The most significant break with Chilean scientific practice is that UNAB's research programs are organized to bridge disciplinary boundaries. UNAB's two research schools are focused around problems, Health and Ecology, rather than traditional scientific disciplines like biology and medicine. All five PhD programs are described in terms of inter- and transdisciplinarity, for example:

"...corresponds to a collaborative effort between academics at the Faculty of Ecology and Natural Resources and other academic units... so as to develop inter-disciplinary science"—PhD program in Molecular Physics and Chemistry

"...corresponds to an emerging transdisciplinary field of science that seeks to understand the interactions between climate change, habitat change, and ecosystem changes induced by nature and humans..."—PhD program in "Medicine of Conservation"

Following the cited scholars, we expected that UNAB, as a for-profit university, would be conducting significantly different research from a non-profit organization; it would be secretive, profit-seeking, exclusively use-inspired, and transdisciplinary. In fact, this is not the case and UNAB's research effort mimics that of traditional universities. At this level of analysis, UNAB's research program is only different in terms of transdisciplinarity.

### Political consequences of UNAB's for-profitness

#### Economic incentives to do research

Many university managers and scientists claim UNAB is investing in research because "research is good business". However, this reflects some questionable assumptions about the university sector. Fondecyt research grants are personal, small (on average US\$100,000), and include little institutional overhead (10–20% compared to over 40% in many US institutions). Under 100 Fondecyt projects in 10 years provides an "income" of just US\$1 million, hardly enough to cover the costs of equipment and space. Furthermore, new private universities are barred from following the strategies to "climb the [prestige and funding] ladder" identified by Katz and Contreras (2009), because they do not receive direct government subsidies.

Research may be "good business" if it attracts students in an intensely competitive market where universities are estimated the third largest advertisers in the country (Monckeberg 2007). However, Chile has a weak science tradition, with 15 PhD graduates per million compared to 153 in similarly populated New Zealand in 2004, and less than 1% of GDP spent on R&D even after the recent increases (OECD 2009). After military intervention and a Napoleonic tradition, the concept of a "research university" is hardly part of Chilean tradition (Meller and Meller 2007; Monckeberg 2007). The majority of new universities attract students without going into research. To believe that students choose research over non-research universities is a strong assumption, particularly among the first-generation students who today form the majority of university students.

The strongest economic justification for a research program may be to justify the expansion of space. UNAB profits from buying and leasing property, and labs populate space.<sup>11</sup> If research is linked to the real estate market, will UNAB continue to expand its research activities? This is an important question for the Chilean government as it decides how to invest in science and technology research. Long-term market projections are difficult to make, particularly in volatile developing markets. If research is to continue growing at for-profit universities, either a clear economic benefit needs to materialize or other motives—such as politics—must be present.

### Changing visions of the “research university”

Personal and political factors explain the creation and expansion of the UNAB’s research program. The chief architect is ex-Chancellor Manuel Krauskopf, a recognized biologist, ex-president of Conicyt, and today Vice-President of Research in Latin America for Laureate. Dr. Krauskopf argues that an authentic university must do research to cultivate a critical internal atmosphere. He draws a strict distinction between the objectives and responsibilities of “research universities” and UNAB’s more modest objectives. Traditional research universities must be accountable to society, but not UNAB:

“While we seek to be equally demanding, to publish in the same journals and patent just like the rest, our objective in doing research has only to do with cultivating a cutting-edge academic atmosphere...The difference has to be clear: a research university—unlike what we do—has to be accountable to society and to the world, of its contribution, which is massive. That is not the purpose of our university, that is not its essential mission.” (Krauskopf 2004a).

Unlike all other UNAB chancellors and Laureate Board members, Krauskopf is not reportedly involved in real estate or business (Monckeberg 2007, pp. 59–64). Krauskopf recruited Pablo Valenzuela, founder of *Fundación Ciencia para la Vida*, considered a model for how research should be organized, and BiosChile, the country’s first biotechnology company (in addition to co-founding Chiron in the US). Valenzuela wanted to “create an entity that links science and business” (Monckeberg 2007, p. 376) and is a self-described advocate of science and technology for production.<sup>12</sup> As scientists, Krauskopf and Valenzuela sought to combine research and commercialization in a less bureaucratic organization. In the process, they are redefining the social role of a research university.

### Research as a political instrument

In 2009 UNAB Chancellor, Roland Kelly, criticized the exclusion of new universities from an association of traditional universities and argued for “equal treatment” (Kelly 2009), something precluded by current university laws. Kelly’s editorial points to the political motivations behind UNAB’s research program: to gain political voice in shaping the country’s science and university policies. The degree of publicness of the system as a whole has implications over the balance between secular and religious, liberal and conservative, for-profit and non-profit orientation of universities, and research activity is one element which defines loyalties and group-membership in this debate. Evidence of these

<sup>11</sup> Whether this is the case warrants further research based on further interviews and access to internal UNAB accounting and business strategy documents.

<sup>12</sup> [http://www.mifab.cl/p\\_valenzuela.html](http://www.mifab.cl/p_valenzuela.html)

dynamics lies in the debates surrounding the Council for Innovation for Economic Competitiveness (CNIC), created by the government in 2005 to promote innovation.

The Association of University Chancellors (CRUCH) represents traditional universities. Its mission is:

“...to defend the requirements of pre- and post-graduate education, scientific research, humanistic and technological excellence, and sustained activities of extension and support of the country’s cultural capital...” ([www.cruch.cl](http://www.cruch.cl))

The CRUCH has responded critically to the shift in state science policy introduced by CNIC, which some call “economicist”:

“Support the development of science in general, as fundamental for innovation, with emphasis on scientific research most applied to technological development and focused on finding solutions to problems of production processes...” (CNIC 2007, p. 19).

Priority areas of growth—aquaculture, tourism, mining, offshore services, and high-tech agriculture—are supported through a well funded new research program that requires industry partnership (Basal program). The CRUCH retaliated with a political definition of priorities and proposed an entirely different research agenda: energy, health, environment, biodiversity, social exclusion, poverty and indigenous groups’ integration to society (Carrasco and Jeldrez 2008).

At the heart of the debate are opposed understandings of the role different institutions have played in the country’s development. CRUCH defends traditional universities’ contributions to development, and nominally argues for better technology transfer policies and diffusion. CNIC-aligned critics claim Chile has no tradition of innovation because universities see themselves as ivory towers, not centers of knowledge in the nation’s material interest, creating a status quo in which creativity and ideas are discouraged (Brunner 2007). But there is more imagined than real in these characterizations of university-industry links. In 2009 the OECD ranked Chile 43rd of 131 countries in terms of university-industry links, significantly better than the country’s performance in educational quality at all levels (ranked over 70th for primary, secondary and tertiary education), in research quality (51st) and in innovation capacity (50th) (OECD 2009, p. 22). Contrary to Brunner, Chilean universities appear relatively well-connected to industry.

By growing its research activities, UNAB can strategically position itself as both a research university—like its CRUCH counterparts—and a new market-driven university, thus playing a pivotal and unique role in the current university debate. Evidence that UNAB is succeeding in thus situating itself lies in the choice of Manuel Krauskopf as the CNIC representative of new universities in July 2009.

## Discussion

“Organizational diversification” in Chile presents areas of convergence—e.g., in the type of research done, eminence of ISI publications, and existing patterns of scientific practice—and divergence, e.g., a challenge to cultural notions of a university’s public rights and responsibilities. Unlike in the US and Europe, exposing science to market mechanisms is not leading to a hybrid system with two parallel but mutually reinforcing quality vectors (Owen-Smith 2003). Rather, in Chile the market is consolidating the prestige and reward system of existing scientific practice, with the only exception of transdisciplinarity. Convergence on scientific practice and divergence on the cultural and social role of the

university threatens emblematic institutions without transforming scientific practice, disappointing scholars who see in the market the potential to revitalize science in developing countries (e.g., Nowotny et al. 2001) and echoing negative experiences in South Africa and Latin America (Vessuri 2000; Jansen 2002).

This case highlights the need for frameworks to understand universities' role as political actors. Politically instrumental research programs may be smaller, shorter-term, and focused on a few areas compared to research programs established for their own sake. A second shortcoming highlighted here is the use of patents as indicators for commercialization. Although government and businesses try to foster patenting, defending infringed patents is very costly and patent rates remain extremely low in Chile. What mix of political and economic factors may sustain investments in research at for-profit universities requires examining many questionable assumptions or beliefs about Chilean society and market, including the social value of research, the culture of patenting, university's real business strategies and the specificities of science in a for-profit context (as opposed to for-profit science in a non-profit context). Finally, this case highlights the difficulties of building new institutions: those institutions that were top quality 30 years ago continue to be top today, despite military intervention, deregularization, new competitors, and funding cuts of between 15 and 35% (Bernasconi and Rojas 2004; Meller and Meller 2007). Echoing Krauskopf, the fundamental question is whether the two visions of the research university—one publicly accountable and the other looking inwards—can share “one market space” or if—echoing Mockenberg—the destruction of the former is required. In this case, it should be clear that traditional universities provide most spaces for lower income students and do the bulk of the nation's research.

## Conclusion

Thirty years after market reforms transformed Chilean universities, new universities are transforming political debates about public rights and responsibilities of universities, but not scientific practice. UNAB mimics traditional universities' scientific practices to gain legitimacy as a “research university” and thus play a pivotal role in redefining the social character of universities in Chile. UNAB's research program may surprise from an economic point of view but reflects a coherent political strategy. The university “market” is increasing socio-economic stratification and imposes very different constraints on different institutions (public, private non-profit, and private for-profit). Existing laws and state-business relations obscure these boundaries and foster a confrontational politics that threatens to deny traditional universities their historical role in promoting social mobility and serving as society's critical conscious.

**Acknowledgments** I would like to thank two anonymous reviewers and Todd LaPorte, David Winickoff, Peter Evans, Nancy Peluso and the participants of ESPM 201C Spring 2009, and Fabian Ochsenfeld for their comments. An earlier version was presented at the Georgia Tech Science Policy conference in October 2009. Of course any errors are my own responsibility.

## References

- Bernasconi, A. (2006). Does the affiliation of universities to external organizations foster diversity in private higher education? Chile in comparative perspective. *Higher Education*, 52(2), 303–342.

- Bernasconi, A., & Rojas, F. (2004). *Informe sobre la Educacion Superior en Chile: 1980–2003*. Santiago, Chile: Editorial Universitaria.
- Brunner, J. J. (1986). *Informe sobre la Educacion Superior en Chile*. Santiago, Chile: FLACSO, Facultad Latinoamericana de Ciencias Sociales.
- Brunner, J. J. (1993). Chile's higher education: Between market and state. *Higher Education*, 25, 35–43.
- Brunner, J. J. (2007). Motores de Innovacion, La Tercera.
- Carrasco, M., Jeldrez, A. (2008). Los rectores defienden la política de innovación elaborada por sus bases *El Mercurio*. Santiago, Chile.
- CNIC. (2007). *Hacia una Estrategia Nacional de Innovacion para la Competitividad* (Vol. 1). Santiago, Chile: Consejo Nacional de Innovacion para la Competitividad.
- Evans, P. (1995). *Embedded autonomy: States and industrial transformation*. Princeton, NJ: Princeton University Press.
- Geiger, R. (2004). *Knowledge and money: Research universities and the paradox of the marketplace*. Stanford: Stanford University Press.
- Hessels, L. K., & Van Lente, H. (2008). Re-thinking new knowledge production: A literature review and a research agenda. *Research Policy*, 37, 740–760.
- Jansen, J. D. (2002). Mode 2 knowledge and institutional life: Taking Gibbons on a walk through a South African university. *Higher Education*, 34(4), 507–521.
- Katz, J., & Contreras, C. (2009). *The Dynamics of University Behavior in Chile*. Chile: Department of Economics, University of Chile.
- Kelly, R. (2009). *La Exclusion de las Privadas*. Santiago, Chile: La Tercera.
- Kirp, D. (2003). *Shakespeare, Einstein and the bottom line*. Cambridge: Harvard University Press.
- Kleinman, D., & Vallas, S. (2005). Contradiction in convergence: Universities and industry in the biotechnology field. In K. Moore & S. Frickel (Eds.), *The new political economy of science: Institutions, networks, power* (pp. 63–90). Madison, WI: University of Wisconsin Press.
- Krauskopf, M. (2004). Estamos contribuyendo al crecimiento de la capacidad científica a partir de los recursos privados que generamos. *Academica de las Ciencias* (Boletín).
- Krauskopf, M. (2004). Manuel Krauskopf, rector Universidad Andrés Bello: “Ciencia es más que un discurso” CONICYT.
- Krimsky, S. (2003). *Science in the private interest: Has the lure of profits corrupted biomedical research?*. Lanham: Rowman & Littlefield Publishers.
- Lahsen, M. (2004). Transnational locals: Brazilian experiences of the climate regime. In S. Jasanoff & M. L. Martello (Eds.), *Earthly politics: Local and global in environmental governance*. Cambridge, MA: MIT Press.
- Levy, D. C. (1986). *Higher education and the State in Latin America: Private challenges to public dominance*. Chicago: University of Chicago Press.
- Meller, A., & Meller, P. (2007). *Los Dilemas de la Educacion Superior: El caso de la Universidad de Chile*. Santiago, Chile: Taurus.
- Monckeberg, M. O. (2007). *El Negocio de las Universidades en Chile*. Santiago, Chile: Random House.
- Mowery, D. (2005). Universities in national innovation systems. In J. Fagerberg, D. Mowery, & R. R. Nelson (Eds.), *The Oxford handbook of innovation*. Oxford, England: Oxford University Press.
- Nelson, R. R. (2005). *Technology, institutions and economic growth*. Cambridge, MA: Harvard University Press.
- Nowotny, H., Scott, Peter., & Gibbons, Michael. (2001). *Re-thinking science: Knowledge and the public in an age of uncertainty*. Cambridge, UK: Blackwell Publishing Company.
- OECD (2009). *La Educacion Superior en Chile*.
- Owen-Smith, J. (2003). From separate systems to a hybrid order: Accumulative advantage across public and private science at Research One Universities. *Research Policy*, 32(6), 1081–1104.
- Owen-Smith, J. (2005). Commercial imbroglios: Proprietary Science and the Contemporary University. In K. Moore & S. Frickel (Eds.), *The new political sociology of science: Institutions, networks, power* (pp. 63–90). Madison, WI: University of Wisconsin Press.
- Ross Schneider, B. (1999). Las relaciones entre el estado y las empresas y sus consecuencias para el desarrollo: una revision de la literatura reciente. *Desarrollo Economico*, 39(153), 45–75.
- Ross Schneider, B. (2004). *Business politics and the State in twentieth-century Latin America*. Cambridge, UK: Cambridge University Press.
- Silva, E. (1996). *The state and capital in Chile: Business elites, technocrats and market economics*. Boulder, CO: Westview Press.
- Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state and higher education*. Baltimore, MD: John Hopkins University Press.

- Stokes, D. E. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Washington, DC: Brookings Institution Press.
- UNAB (2008). Informe para la reacreditacion institucional, Universidad Andres Bello.
- Vessuri, H. (2000). Mode 2 or the Emblematic Disentanglement of Science: A view of the edge. *Science, Technology & Society*, 5, 195–207.
- Vessuri, H. (2007). *O inventamos o erramos*": *La ciencia como idea-fuerza en América Latina*. Bernal, Argentina: Universidad Nacional de Quilmes Editorial.
- Wynne, B. (1992). Representing policy constructions and interests in SSK. *Social Studies of Science*, 22(3), 575–580.