SEEKING FACULTY JOBS: EXPLORING THE RELATIONSHIP BETWEEN ACADEMIC'S SOCIAL CLASS OF ORIGIN AND HIRING NETWORKS IN CHILEAN UNIVERSITIES[1]

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ABSTRACT

This research consisted of a qualitative case study on how a group of early-career doctorate holders in engineering (N=10) found academic positions in the Chilean academia. The analysis particularly explored how their social class of origin and their academic networks influenced their opportunities of getting an academic job. Findings show that social class of origin mediates the academic network configuration of academic-job seekers through unequal opportunities of completing their undergraduate degrees in prestigious Chilean universities with high research capacity, and subsequently, the unequal opportunities of studying a doctorate degree at top-ranked foreign universities. Only upper social class candidates who received their doctorate degrees from foreign highly prestigious universities were capable of securing positions at the top research-intensive Chilean universities. Overall, findings show that academic networks with professors who are knowledgeable of hiring processes are crucial at the moment of seeking academic jobs in the Chilean higher education system.

Key concepts: Social Class, Networks, Academic Careers.

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BUSCANDO UN TRABAJO ACADÉMICO: UN ANÁLISIS EXPLORATORIO DE LAS RELACIONES ENTRE CLASE SOCIAL DE ORIGEN DE LOS ACADÉMICOS Y REDES DE CONTRATACIÓN EN UNIVERSIDADES CHILENAS

RESUMEN

Este artículo utilizó una metodología cualitativa de caso para analizar el rol que cumple la clase social de origen y las redes académicas en la obtención de posiciones académicas. El grupo de estudio incluyó 10 personas con doctorados en Ingeniería y que estaban en las etapas iniciales de su carrera académica. Los hallazgos de la investigación muestran que la clase social de origen de los académicos influye indirectamente en la configuración de sus redes dada la estrecha relación entre la clase social de origen y la posibilidad de asistir a universidades de investigación intensiva durante el pregrado. Posteriormente, las redes desarrolladas durante la formación de pregrado y la clase social de origen inciden en la decisión de estudiar un doctorado en universidades extranjeras con alto prestigio. Los hallazgos muestran que solo los candidatos de la clase social alta que recibieron su doctorado de universidades extranjeras de gran prestigio fueron capaces de obtener puestos en las universidades chilenas de mayor prestigio. En general, los hallazgos muestran que las redes académicas con profesores que conocen los procesos de contratación son cruciales al momento de buscar trabajos académicos en el sistema de Educación Superior chileno.

Conceptos clave: Clase social, redes académicas, carreras académicas.

Introduction

A large number of studies across multiple countries show the existence of academic hiring networks operating within the larger framework of stratified higher education systems. Faculty[3] who studied in the most prestigious academic departments in their respective disciplinary fields are the ones who end up securing tenure-track positions at equally prestigious academic departments (for Chile, see Celis & Kim, 2018; for the USA, see Burris, 2004; Clauset, Arbesman, & Larremore, 2015; Hadani, Coombes, Das, & Jalajas, 2012; Headworth & Freese, 2016; for France, Germany, and the USA, see Musselin, 2009; for South Africa, see Cowan & Rossello, 2018).

Whether academic departments prefer candidates with an "elite pedigree" because it indicates academic quality and/or because these candidates have connections to prestigious universities is a topic of discussion in the relevant literature (Burris, 2004; Hadani et al., 2012; Musselin, 2009; Posselt, 2018). Whatever the case may be, the practice of recruiting and selecting candidates based on the prestige of PhD-granting academic departments evolves into a social closure mechanism, which consciously or unconsciously excludes individuals who did not study at highly prestigious universities (Burris, 2004; Hadani et al., 2012).

Furthermore, this practice—filtering/recruiting candidates based on the prestige of PhD-granting universities—may contribute to the social-class reproduction of academics, particularly in countries where the chances of entering prestigious PhD-granting universities is strongly associated with the social class of origin of individuals (For the USA, see Crane, 1969; González Canché 2017; Ostrove, Stewart, & Curtin, 2011; for Chile, see Perez Mejias, Chiappa, & Guzmán-Valenzuela, 2018). Social class of origin, broadly defined here, represents the social, cultural and economic assets inherited from one's family (Bourdieu, 1987).

Despite the large body of evidence that shows the relationship between social class of origin and level of prestige of educational institutions attended, there are only a handful of studies that have

empirically analyzed the role that social class of origin plays in the probability of obtaining an academic job (Jungbauer-Gans & Gross, 2013; Oldfield & Conant, 2001). Particularly, the ways in which the social class of origin of doctorate holders influences the process of developing academic networks and finding a faculty job is still underexplored (Chiappa & Perez Mejias, 2019; Oldfield & Conant, 2001).

In this paper, I aim to contribute to filling this knowledge gap using the findings of a qualitative study that analyzes *how* Chilean doctorate holders in engineering, from different social classes, successfully secured tenure-track academic positions at Chilean universities, by paying special attention to the role of their networks in securing their current jobs. Specifically, this study answers two questions: a) To what extent, if any, does the social class of origin of doctorate holders influence their possibilities of finding faculty jobs?, and b) To what extent does social class of origin influence the ways in which doctorate holders developed and used their networks to find their current jobs?

Why Chile?

Chile is experiencing a rapid increase in doctorate graduates competing for academic jobs, due to a dramatic expansion of doctorate fellowships sponsored by the government. In the last decade, the country has funded 10,000 fellowships for studying doctorate degrees in Chilean and foreign[4] universities (CONICYT, 2018), achieving one of the highest rates of doctorate holders per inhabitant in the Latin American region (RICYT, 2018). Furthermore, the rapid increase in government-sponsored doctoral fellowships has also augmented the *number* of PhDs from low social class backgrounds, as compared with past generations of doctorate holders in Chile (MINECON, 2012).

An analysis of how doctoral holders from different social classes find academic jobs is also particularly relevant in the Chilean

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4   The foreign fellowship program, called Becas Chile, has awarded around 3,700 fellowships since 2008 (CONICYT, 2018).

context due to the country's high level of income inequality (PNUD, 2017). The 20 % richest people have an average income 10.2 greater than the 20 % of the poorest population (OECD, 2020). This high level of income inequality is reproduced at the undergraduate level, mainly by the unequal chances that students from low socio-economic status have in succeeding in the national college admission test. This assessment, named Prueba de Selección Universitaria in Spanish (PSU), is one of the main admission criteria to determine which students can access the most selective universities (Canales, 2016; Perez Mejias, 2012). At the graduate education level, there is not a complete dataset that contains information regarding the socio-economic status of students enrolled in masters and doctorate programs (MECESUP, 2014; MINEDUC, 2018a). However, different sources of information show that more than half of the students enrolled in Chilean doctorate programs come from families whose parents have college degrees or who studied at private high schools (MECESUP, 2014; MINEDUC, 2018a). Likewise, it is estimated that around 56 % of the individuals who received one of the government fellowships to study in a foreign university within the period 2011–2015 went to private high schools (Perez Mejias et al., 2018). Potentially, the structural inequality of the Chilean higher education system could also be affecting the possibilities of early-career doctorate holders finding a job in the Chilean labor market as will be explained below.

Academics Careers in Chile

By 2017, there were 87,216 faculty members (headcounts) working in Chilean higher education, but only 12 % of them held doctorate degrees (MINEDUC, 2018b). Among academics who held doctorate degrees, 90 % had full-time tenure-track positions and were mostly distributed across research-intensive universities, while the remaining 10 % had part-time jobs at more than one university (MINEDUC, 2018b).

In Chile, universities have complete autonomy to set the criteria and procedures to hire new academics. Nonetheless, since public funding access is subjected to processes of academic quality

assurance and favors the profile of research-intensive universities, academic departments have increasingly set the doctorate degree as one of the minimum requirements for hiring (Bernasconi, 2008; Celis & Véliz, 2017). Similarly, the heavy reliance of international and national university rankings on research outcomes (Pusser & Marginson, 2013; Perez Mejias et al., 2018) has reinforced the strategic role of "researcher academics" to build the institutional prestige of universities (Bernasconi, 2010).

In a recent study, Celis and Kim (2018) found that industrial engineering academic departments at research-intensive universities predominantly hired undergraduate alumni who had completed their doctorate degrees at foreign universities. Focusing on the perspective of faculty-job seekers, Pinto (2016) conducted a qualitative research of professional trajectories of Chilean doctorate holders (27 participants; semi-structured interviews) who sought academic jobs within the Chilean university sector. Pinto's analysis shows that doctorate holders who did not have a prior connection with the academia were the ones that faced the greatest difficulty in finding academic jobs. Furthermore, Pinto's analysis indicates the relevance of academic ties to securing faculty positions, but does not consider how the structure of stratified Chilean higher education influences the opportunities that doctorate holders from different social classes of origin have to develop their academic networks. An important part of the evidence presented in this paper builds on Pinto's work, adding the variable of social class to the analysis.

Conceptual Framework

Three theoretical perspectives—social and cultural reproduction (Bourdieu, 1983, 1987, 1988; Bourdieu & Passeron, 1977), human capital (Becker, 1967; Mincer, 1984; Schultz, 1970), and network theory (Burt, 2000; Granovetter, 1973; Lin, 2001)—were used to analyze how doctorate holders from different social class groups utilize their networks to find academic jobs.

Social and cultural reproduction theory posits that education is one of the main systems through which power and symbolic relations

among social groups are reproduced (Bourdieu & Passeron, 1977). The social class positioning of individuals depends not only on their economic wealth, but also on the amount and *exclusivity* of cultural and social capital that individuals accumulate (Bourdieu, 1987). From this perspective, the close connection and interdependence between different types of capital triggers socialization processes and group closure that end up reproducing social class disparities among individuals even after achieving a doctorate degree.

For instance, if a doctorate degree, typically considered a type of cultural capital, symbolized upper-middle class status two decades ago since it mostly guaranteed a high salary (economic capital), today, that same doctorate degree no longer guarantees upper-middle class social status in itself. Within the context of the expansion of doctorate education, doctorate holders are increasingly differentiated according to the prestige of their PhD-granting universities (Pázstor and Wakeling, 2018), their networks (social capital) with reputed academics, and their scientific productivity, typically measured in publications and grants received (Pinto, 2016).

In contrast, human capital scholars (Becker, 1967; Mincer, 1984; Schultz, 1970) stress the role of education as an enabling factor that allows individuals from all social class groups to achieve the skills, knowledge, and networks to successfully compete in the labor market. From this perspective, doctorate holders in Chile represent a selective minority, since they invested at least 20 years in education and successfully completed several intellectual milestones. They acquired the knowledge and skills of the disciplinary field as well as the norms and values of the academic culture, regardless of their social class of origin. It is worth noting that human capital theorists (Becker, 1967; Mincer, 1984; Schultz, 1970) do not reject the stratification of the higher education system nor the relevance of networks for accessing valuable information regarding job opportunities. Yet, promoters of the theory of human capital would expect that the chances of finding a job are less associated with a person's social class of origin and their networks than their productivity. Concerning the prestige of PhD-granting universities, human capital advocates accept the assumption that the prestige of a PhD-granting university matters

only when it signals the academic quality to which applicants were exposed to during their doctoral training, and consequently, their potential of academic productivity.

Network theorists (Burt, 2000; Granovetter, 1973, 1995; Lin, 2001) recognize that greater success in the job market (and in life) is not necessarily due to the investment of individuals in education, but rather stems from their social relationships. Network theorists argue that individuals may intentionally invest in social connections and improve their social status by accessing resources embedded in their networks (Lin, 2001). Similar to the tenets of social and cultural reproduction, network theory proponents recognize that the power and resources that individuals access in their networks is strongly associated with the social status that they have in society. Nonetheless, the total value of the network is not only measured by accumulated amount of resources that networks member has, but also in the diversity of resources that network's members bring and the type of ties that connect members' network (strong or weak ties).

The depth of a network tie is reflected by the degree of intensity, frequency of interactions, reciprocity, and acknowledged obligation between the parties (Granovetter, 1973). From this framework, doctorate holders who develop the *largest* number of *strong ties* with faculty members occupying *strategic positions* in faculty hiring processes, are expected to be better off during the faculty job search as compared to their colleagues who lack such connections.

Methodology

This study consists of a qualitative case study on *how* early career doctorate holders from different *social classes of origin* find their academic jobs and use their networks to secure them. Qualitative case studies are detailed examinations of a social phenomenon; by nature, they are mostly exploratory and descriptive, and consequently, the purpose of conducting a case study is in-depth analysis and hypothesis generation rather than scope and hypothesis testing (Merriam, 2009; Patton, 2002; Yin, 1981).

The data in this article draws from a larger qualitative comparative case study on the process of academic hiring at Chilean universities with different levels of prestige. In this article, research participants include doctorate holders in engineering (N=10) who completed their doctorate degrees within the last five years (see Table 1). I selected doctorate holders in engineering, assuming that doctorate holders in this area are highly demanded by the market, and consequently, their social class of origin would have little effect on their chances of finding academic jobs. As described by the Chilean government, engineering is considered one of the key areas in the national agenda of science and technology of the country (CNIC, 2006). No women were included in this study, mainly because the few women working in the selected departments did not meet the selection criteria. This is partially a reflection of the lack of female representation in the engineering field in Chile (Berríos, 2005).

Table 1.
Characterization of participants in the sample

Participants	Social class of origin assigned	Variables of social class of origin		
		High school type	Education and/or occupation of parents, as described during the interview	Spoke a foreign language
Alan	Upper	Private	Both parents have college degree	Yes
Gonzalo	Upper	Private	Mom has a college degree in the area of health science; dad has a college degree and owns a small business	Yes
Mario	Upper	Private	Mom and dad completed a college degree	Yes
Antonio	Upper	Private	Dad has a PhD degree, worked as university professor; grandfather was part of the regional economic elite	Yes
Gino	Upper	Private	Dad has a college degree; mom is a housewife	Yes
Carlos	Middle	Not identified	Mom has a technical degree; dad is the owner of a small public transportation company	No
Francisco	Middle	Public	Dad owns a small business, attended a highly selective public high school	No
Omar	Low	Public	Mom did not complete high school; does not refer to his dad; refers to the lack of resources in the family	No
David	Low	Public	First-generation college student, self-reported	No
Gabriel	Low	Public	Participant did not explicitly refer to parental level of education, but he had limited economic resources for studying in another city	No

Data

For this article, the data analyzed consists of 10 semi-structured, face-to-face, taped interviews conducted between January and April of 2017, as well as reviews of the CVs of the participants and observational notes written up after each interview. During the interviews, participants were asked to narrate their entire educational experience from the moment they left high school, as well as the strategies they used to find their current faculty jobs (see Appendix-Protocol). Each interview lasted from 45 to 75 minutes,

was conducted in Spanish, recorded, and transcribed verbatim. Data analysis was undertaken in Spanish and the specific quotes cited in this document were translated into English by the author.

Analytical Techniques

One of the first tasks in the analytical process was to identify the social class of origin of each faculty member. To do so, every single interview was coded line by line, paying special attention to information that alluded to their living experience before starting their undergraduate degree. A validation question was included at the end of the interview protocol that indirectly asked about the level of education of their parents.

Then, a simple coding scheme based on educational and professional transition was applied to all interviews. This code scheme aimed to identify the resources, people and capitals available that doctorate holders used to a) select their undergraduate field of study and undergraduate university; b) decide to pursue a doctorate degree; (c) select the PhD-granting university; and (d) find an academic job. This phase of coding ensured that all interviews were analyzed by seeking the same themes and establishing the same associations between content and themes. Next, I compared participants' responses according to their social classes of origin.

Limitations

The research design of this study has three limitations relative to understanding the complete picture of how social class of origin of early-career academics influence their academic job searchers and the role their academic networks played in securing an academic job. First, it considers only cases of doctorate holders who found a position as assistant professors at universities with research capacity in Chile. I did not include the group of doctorate holders who sought but did not get academic jobs nor the group of doctorate holders who did not even attempt to seek academic jobs, mainly because the focus of this study was to analyze how social class affected the network formation of those individuals who were successfully appointed to

academic positions. Second, this research only considers doctorate holders from one disciplinary field. I decided to focus on only one disciplinary field—industrial engineering—and to include only doctorate holders with the same employment status, because I wanted to reduce variability on other sociodemographic and professional characteristics of doctorate holders that could have affected their network formation.

The third limitation is that a significant number of the questions asked during the semi-structured interviews alluded to life events that occurred several years ago, such as the selection of the doctorate program. Since I was aware that people do not exactly remember how past events occurred, part of the methodological design of this research included a careful examination of the CVs of the respective participants before the interview. This preparation allowed me not to only adapt the questions of the protocol, citing the specific dates on which participants started their undergraduate a doctorate programs, but also to generate an additional point of information to support or correct participants' memories when it was necessary.

Methodological Note: Participants Social Class Identification

The interview protocol does not include any direct question concerning the social class of origin of doctorate holders primarily because the inclusion of direct questions about class could have influenced participants' responses in providing answers that link their careers with their social class. Nonetheless, all participants alluded, to different degrees of detail, to the economic and social resources they were exposed to along their educational trajectory. This enabled collecting three data points for most of the participants concerning their social class of origin: parents' level of education, type of high school attended, and learning of a foreign language prior to entering undergraduate university. Only two of the participants referred directly to their social class backgrounds while they were talking about their decision to pursue a doctorate degree (Omar and Antonio).

Relying on the definition of social class of origin discussed above (Bourdieu, 1987) and the class attributes identified in a prior

study (Chiappa & Perez Mejias, 2019), the following three data points were used to capture participants' social class: (a) parental level of education; (b) type of high school attended; and (c) foreign language proficiency. Acquisition of a second language in Chile is strongly associated with having attended a private high school (MINEDUC, 2015) and had access to international travel.

Table 1 describes the list of participants and their respective social class of origin. The upper social class group (N=5) had parents with at least a college degree, attended private high schools (completely paid by the family), and had learned a second language during high school. I classified participants in the low-social class group (N=3) when they reported being a first-generation college student, attended a public high school (free, publicly funded), and or explicitly referred to low economic resources in their family. Finally, I classified participants in the middle-class group (N=2) when at least one of their parents had some tertiary education or when the participant attended selective public high schools or subsidized high schools (parents pay a co-payment, publicly subsidized), which indicates a certain degree of academic capital. To ensure complete anonymity of participants and their respective institutional affiliations, all original names were replaced with pseudonyms and specific information about institutional features of participants' current employers are described in general terms.

Findings

All participants in this research represent successful cases of individuals who were able to secure a position as an assistant professor in industrial engineering academic departments linked to universities with accredited research capacity within a period of two years after completing their doctoral program. The findings, summarized in Table 2 displayed in the appendix section, show that participants faced three different job search scenarios six months before completing their doctorate degrees. Some participants had already secured a faculty tenure-track position (Omar, David, Carlos, Mario); others had some type of temporary academic position (Gabriel, Francisco); and the remaining ones were actively engaged

in applying for a tenure-track faculty job (Alan, Antonio, Gino, Gonzalo).

The analysis reveals that the number of months spent applying for a faculty tenure-track position is not directly associated with participants' social class of origin, but with having developed strong ties with professors who possess valuable information about faculty job openings. Overall, doctorate holders from upper social class applied to a greater number of jobs, relied on a greater network of contacts to find their current jobs, and ended up being hired at more prestigious universities in comparison with participants from middle and low social classes.

In what follows, findings are organized in three sections. The first one analyzes how the association between social class of origin and the undergraduate university attended impacts on the selection of a doctorate program, and consequently, the academic job search. The second part describes the importance of generating strong ties with professors who are knowledgeable about or involved in academic hiring decisions. The third part shows the different strategies that participants with a variety of educational paths followed to secure their current jobs.

Social Class and the Structural Role of the Undergraduate University in the Configuration of Academic Networks

The undergraduate university attended influenced the future academic careers of all participants in three ways. First, most of the participants made the decision to pursue a doctorate degree because they had a teaching or research assistant position that made them aware of their interest in academia, or because they had undergraduate professors and classmates who encouraged them to apply for a doctorate degree. Second, most participants' undergraduate thesis supervisors provided their students with valuable information about doctorate programs and funding opportunities while they were completing their undergraduate/master programs. In several cases, participants completed a master's degree at the same time they were finishing the last year of their undergraduate engineering program. With the

exception of Antonio (upper social class) who did not develop a close relationship with his supervisor, all participants state that their undergraduate thesis supervisor was a crucial agent in the selection of a doctorate program.

Yet, not all the participants had access to undergraduate professors and colleagues with information and connections to foreign doctoral programs. The stories of Gonzalo (upper social class), Gabriel (low social class) and Omar (low social class) capture the mechanisms through which social class of origin is reproduced via unequal access to information and resources at the undergraduate level.

Gonzalo (upper social class) grew up in Santiago with parents who completed college degrees. Gonzalo went to a highly selective private high school and obtained a perfect score in the national college admission test, so he picked the university that had the greatest research capacity and offered him the best package of fellowship options. During his undergraduate program, he rapidly became aware of the possibility of pursuing a doctorate degree, since several other students from his undergraduate program had completed their postgraduate studies at foreign universities. He also met an acquaintance at a conference who was just returning to Chile after earning a doctorate degree. He recalls: "At the moment I decided to apply to a doctorate program, a couple of colleagues of my undergraduate program were also applying to the same North American university […] as I did. Then, coincidently, I went to a conference where I met a guy who was just finishing his doctorate program in the USA. We met for a coffee and he helped me with answers to my queries regarding how it is to live there, which are not easy to find on internet."

In contrast, Gabriel (low) grew up in a small town in the south of Chile, with parents who did not complete high school. After he graduated from high school, he selected the closest university to home, even though he had been admitted to a university with greater research capacity located in another city, because his family could not afford for him to live elsewhere: "My PSU [college admission test] score was enough to study in [the best regional university],

but the city was too big for me and the economic situation of my family did not allow me to leave home." While he was completing his undergraduate degree, he started to work with a young professor who was finishing his doctorate degree at a Chilean university. This professor became Gabriel's undergraduate thesis supervisor, and, according to Gabriel, was the person who most encouraged him to pursue a doctoral degree.

Gabriel says, "There was very little information about doctoral fellowships at my undergraduate university… Nobody was talking about the foreign postgraduate fellowship program [Becas Chile]. In my case, it was my supervisor who told me about the idea of doing a doctorate degree, and who knew about the fellowship [to study for a doctorate degree in Chile]."

Asked about the possibility of studying at a foreign university, Gabriel explained that he initially considered studying abroad, but he needed to stay closer to his family. "I stayed in Chile because of family issues. [Family support] was very important for me. And the fact that I could support them was also important. You know, it's not that easy to arrive and say, 'I am leaving to study in another country'."

The need to support or contribute to one's family while completing a doctorate degree is a common topic for doctorate holders from low social classes. Hence, access to additional funding sources are critical for lower class fellows when deciding whether to study for a doctorate degree in Chile or at a foreign university. Omar, a first-generation college student who self-identifies as a person from a low social class, explains that he only applied to one well-ranked university in France, primarily because he had been able to visit France as part of a research project during his undergraduate studies and because he negotiated a pre-doctorate hire agreement with his former undergraduate university. Omar's undergraduate university has faced difficulties recruiting faculty with PhDs in engineering, so the university created a special program to recruit alumni who receive foreign fellowships to study abroad.

Through this program, he was hired as an instructor at his former university before he started his doctorate program, which allowed him to contribute to his family income. He explains: "I come from a low social class… so there were several expectations [from my family] as to when I was going to start working as an engineer to help my family. That is an important barrier, when you do not have support and you study a career like this one [engineering] that provides a good income that will significantly contribute to the family income…, so I sought to get hired by this university [before starting the PhD] in order to leave an income for my family [while completing the doctorate]. [My undergraduate thesis supervisor] encouraged me to apply to a program in the School of Engineering that pre-hired students who had obtained one of the foreign doctoral fellowships."

The barriers that Omar faced due to his social class of origin —economic responsibility to contribute to family income and lack of international experience—were partially compensated for by the resources that he was able to access at his undergraduate university.

Strong Ties with Professors Working in Chile to Secure Faculty Jobs: Different Experience for Doctorate Holders from Different Social Class of Origin

As described by the participants in this study, having strong ties with professors who are involved in or knowledgeable about faculty hiring processes is one of the most important factors to secure an academic job. Findings show that participants who come from low-class and middle-class backgrounds developed strong connections with their former professors and relied on these professors to secure their current positions. These former professors had access to insider information about faculty hiring advertisements or directly participated in faculty hiring processes, which provided participants from low-class and middle-class groups valuable information during the hiring processes. As Table 2 shows, all participants in this study from low and middle social classes had already secured an academic position six months prior to completing their doctorate degrees.

Participants from the upper social class also developed strong connections with former undergraduate and doctorate professors working in Chile, but they seem to have relied on their former professors to a lesser extent, in comparison to their peers from lower social classes. Because of the inherent advantages from their family backgrounds, participants from upper social class backgrounds were exposed to a greater number of opportunities for developing ties with acquaintances beyond their formal undergraduate and doctorate programs.

For instance, Antonio (upper social class), who studied his undergraduate program at a regional university, is the only participant who openly said that he comes from a rich family and that his father was a university professor. Contrary to the other participants in the study, he comments that he did not have a good relationship with his undergraduate thesis supervisor. He made the decision to study for a doctorate because one of his best friends from his undergraduate program encouraged him to enter a PhD program in Europe.

Table 2.
Process of seeking academics jobs

Participants	Social class of origin / Main source of funding during PhD*	Ranking position** and place of education of undergraduate (UG) and PhD degrees	Main academic ties during job applications process	Months actively seeking for jobs	Number of formal job applications to tenure-track faculty positions	Employment situation six months prior to completing PhD	Process of looking for a job
Alan	Upper / Gov. Fellow + PhD Univ. Funding	**UG:** Top 500, Santiago, Chile / **PhD:** Top 10, USA	PhD adviser & professors of the PhD academic department. Colleagues met in the doctorate program. Professors from his UG degree.	4	Chile: 3 faculty-tenure-track positions; but held informal conversations with faculty at second tier research universities who were interested in hiring him.	Actively seeking a tenure-track faculty job.	Applied to three or four job calls at different Chilean universities within the last 10 months before PhD completion. Visited Chile one year before ending the doctorate program and offered to give talks at different universities.
Gonzalo	Upper / Gov. Fellow + PhD Univ. Funding	**UG:** Top 500, Santiago, Chile / **PhD:** Top 10, USA	PhD adviser. Colleague met in the doctorate program. Professors from his UG degree Professor working at his former employer.	6	USA: Applied 6 tenure-track positions; Chile: applied 1 tenure-track position; applied 1 European postdoc.	Actively seeking a tenure-track faculty job.	Applied to all job calls at different Chilean and American universities within the last 10 months before PhD completion. He collaborated with a Chilean colleague who was completing the doctorate program at the same time to keep track of all job openings in different countries worldwide.

Name	Social class	Funding	Education	Networks	N	Chilean positions	Status	Narrative
Mario	Upper	Gov. Fellow + PhD Univ. Funding	**UG:** Top 500, Santiago, Chile; **PhD:** Top 10, USA	UG thesis supervisor, PhD adviser	0	Chile: 1 faculty tenure-track position. Applied during second year of his doctorate program.	Hired in a tenure-track faculty position.	While he was in the second year of his PhD, he saw a job opening at his former undergraduate university. Contacted his undergraduate professors asking whether he had any chance to get the position.
Antonio	Upper	Own funding first year, second year PhD Univ. research projects	**UG:** Non-ranked, Central Region, Chile; **PhD:** Non-ranked, Germany	PhD supervisor, close colleague met in the UG already working as a professor, close professor working at another institution, family friends with academic positions	24	Chile: 10 faculty-tenure-track positions; had multiple informal interviews at Chilean universities and one with a private firm that hired him.	Actively seeking a tenure-track faculty job.	Applied to around 10 open job calls. Contacted colleagues who already worked at the universities, telling their colleagues that he was looking for a job.
Gino	Upper	Gov. Fellow + PhD Univ. projects	**UG:** Non-ranked, South Region, Chile; **PhD:** Top 500, Chile	PhD supervisor, colleagues from doctorate program Professors from his UG degree.	6	Chile: 3 faculty-tenure-track positions; but hold informal conversations with another university.	Actively seeking a tenure-track faculty job.	Made sure to meet minimum requirements of publications before finishing his PhD. Applied to open positions as suggested by his PhD supervisor and the colleagues he had met during the doctorate program.
Gabriel	Low Chilean	Gov. Fellow + Additional part-time teaching jobs	**UG:** Non-ranked, South Region, Chile; **PhD:** Top 500, Chile	PhD supervisor, colleagues from doctorate program.	3	Chile: 1 faculty tenure-track position (after he was already working as a part-time instructor).	Had a temporary academic position.	Found a lecturing job through his doctorate classmates during the last two years of the doctorate. Was told that the University would open a tenure-track vacancy in the near future. Was advised to wait and formally apply to the position. He finally ended up being hired as an assistant professor.

Name		Funding	Education	Contacts		Job search	Outcome	Description
Carlos	Middle	Gov. Fellow + Additional part-time teaching jobs	**UG:** Non-ranked, Central Region, Chile **PhD:** Non-ranked, Chile	PhD supervisor, colleagues from doctorate program.	0	Chile: 1 application. Was contacted by his supervisor who told him about the opportunity. Had an interview; sent his formal documents afterwards.	Hired in a tenure-track faculty position.	Before completing his doctorate degree, PhD-supervisor notified him of a position available at the university where his supervisor had been recently hired.
Francisco	Middle	Univ. fellowship from the first year	**UG:** Non-ranked, Central Region, Chile **PhD:** Non-ranked, Spain	PhD supervisor, colleagues from doctorate program. Professors from his UG degree.	4	No official need to apply. Europe: 3 postdoc positions; China: 1 postdoc; Chile: 1 postdoc position; faculty position was found.	Had a postdoc grant at his former PhD university.	Applied to a competitive postdoc grant funded by the Chilean government while he was finishing his first postdoc in Europe. This allowed him to negotiate a faculty tenure-track position with his Chilean postdoc institution.
David	Low	Gov. Fellow + Faculty salary	**UG:** Non-ranked, Santiago, Chile **PhD:** Non-ranked, France	Pre-hiring agreement. UG thesis supervisor.	0	No need to apply for jobs.	Hired in a tenure-track faculty position.	Signed a pre-hire agreement with his former undergraduate academic department during the second year of his PhD.
Omar	Low	Chilean Gov. Fellow + Faculty Salary	**UG:** Non-ranked, Santiago, Chile **PhD:** Top 50, France	UG thesis supervisor, PhD supervisor and colleagues.	0	No need to apply for jobs.	Hired in a tenure-track faculty position.	Signed a pre-hire agreement with his former undergraduate academic department before starting the PhD.

* Gov. Fellow: Government sponsored-fellowship; Univ.: University

**I used the international ranking Shanghai Jiao Tong, also known as ARWU, to inform the university positioning.

According to Antonio, he could complete a doctorate degree in Germany without the support of his undergraduate supervisor, which curtailed his chances of applying for a government fellowship (Becas Chile), primarily because he had ample economic resources, as well as other colleagues and acquaintances beyond his academic supervisor who guided him during the process: "It is very unfair. I could [study for a doctorate degree abroad] because my grandfather was a millionaire. I did not have any debt from my undergraduate university, so I could save money and visualize the possibility of studying abroad without a fellowship, even without any support from my undergraduate thesis supervisor." While applying to doctorate programs, Antonio met a young professor who was just coming back from his doctorate program in Europe, and who had recently been hired at a university in the same city where Antonio was living. This professor ended up becoming Antonio's mentor, and helped him through the process of applying to doctorate programs.

After completing his doctorate degree in Germany, Antonio spent two years seeking a faculty job. At the end of the first year, he decided to talk to one of his father's former colleagues, who at that time was the head of the research lab of an important private firm in Chile. This family friend ended up hiring him. As he describes, "To be honest, I think he only hired me because he knew my dad." Eventually, one of Antonio's current colleagues advised him to apply for his current faculty position. He was despondent at the time, due to many failed attempts at securing a faculty job, but this friend helped him by talking to the dean about him. "I got this job thanks to my neighbor, who is next to me [pointing to the neighboring office]. I had applied here twice before [using open calls], and for the third one, [my friend] said, 'You know… I think you have an opportunity now, because the dean now is [name of the dean], and he is much more objective in the hiring process. He will pay more attention to the CV rather than to anything else.' But my neighbor helped me by talking to the dean about me."

Antonio's experience reflects the importance of having strong ties with professors who are already working in academic departments, and the extra advantages that upper social class

faculty may have by being better able to initiate ties with actors with influential positions in different economic sectors.

By contrast, Carlos (middle class) went to the same undergraduate university as Antonio, and is currently working in the same academic department, but Carlos did not have to search for an academic job because his doctorate supervisor informed him about a job opening that fitted his profile long before Carlos finished his doctorate degree in Chile and entered the job market. "I did not know about this job opportunity, but I did what my adviser suggested," Carlos explains. "I went to an interview, I sent my papers and CV afterwards, and a few weeks later, they notified me that I had been selected [...] Why did they pick me? I think I matched the profile they were looking for… and I also think the reference of my former supervisor influenced the decision to hire me." Carlos's doctorate supervisor had been recently appointed to an important position at his current university employer and had known Carlos since his undergraduate days. Carlos asserts that he would not have started a PhD degree without this professor: "I did not know what a PhD degree was, but this professor told me one day while I was about to finish my master's. 'You know, your work is good; you should consider doing a PhD degree' [...] I researched what a PhD involved, and made the decision."

The institutional authority of Carlos's adviser might not have affected the university's hiring decision at all. Indeed, Carlos had a good number of publications and awards that made him a competitive candidate. But the fact that his advisor was knowledgeable about the specific hiring needs of the department helped Carlos to become aware that he could secure a faculty tenure track position.

The Relevance of PhD Foreign Credentials and Competitive Grants to Secure Positions at Highly Prestigious Universities

The participants in this study who earned their doctorate degrees in Chile—Gino (upper social class), Carlos (middle social class), Gabriel (low social class)—inevitably developed strong ties with professors and colleagues working at the most prestigious engineering departments in Chile, who had been their supervisors and colleagues,

regardless of their social class of origin. Nonetheless, their chances of securing faculty jobs were restricted to fewer institutions of lower research capacity than their former PhD-alma mater. According to participants who studied their doctorate degree in Chile, academic departments at research-intensive universities do not hire their PhD-alumni, but rather PhD holders who studied at prestigious foreign universities. As such, the strategy of finding an academic job for doctorate holders in Chile emphasizes the need for increasing research output.

It is the case of Gino (upper social class), who after finishing his undergraduate degree in a regional university decided to complete his doctorate degree in Chile. Advised by his own doctoral adviser, Gino took one semester extra to complete his doctorate degree in order to guarantee that was able to produce a good number of publications.

In contrast, Alan and Gonzalo (upper social class), who graduated from top-ranked American universities, did not care much about their number of publications (they already had at least two peer-reviewed articles each); instead, they contacted their former undergraduate professors and told them they were seeking for jobs. As explained by Alan, one year before finishing his doctorate degree, "[he] came to Chile and volunteered to give talks at several Chilean universities where he had contacts." He knew "how competitive the process was, so [he] needed to reconnect with [his] past networks." Alan applied to around five faculty job positions, only in Chile, partially because his romantic partner wanted to come back to Chile and he had obtained a government fellowship (Becas Chile), which required him to come back. He ended up being hired by his former undergraduate university.

Francisco (middle) represents a distinct experience in seeking a faculty job, one in which professional ties with the faculty in a given academic department are not as important as the capacity to earn competitive research grants. After completing his PhD in Spain, he stayed at his academic department as a postdoctoral fellow for a couple of years, funded by a grant from the European Union. When this postdoctoral position neared its end, he applied to a highly

competitive grant funded by Chilean institutions that enabled him to fund his own research agenda. Once the results were published, Francisco received several job offers enabling him to negotiate a contract in a tenure-track position.

Francisco is the only participant in this study who was able to get hired by a more prestigious university than his undergraduate institution. He acknowledges that without his postdoctoral grant and a credential from a foreign university, it is unlikely that he would have been appointed in the job he has today. "The structure of the university is fixed, and the number of people that get hired is less, as compared to the number of people who are arriving from their doctorate degrees and applying for jobs. Hence, what matters are the details that differentiate the profiles of candidates. A PhD from a foreign university, some publications at good journal and if you know the right people, that can make a difference. [...]"

Discussion

This study aimed to acquire a deeper understanding of *how* early career doctorate holders in engineering from different social classes of origin found faculty jobs and the role of their networks in securing these positions. This research adds three important findings to the international literature on the role of networks in faculty job placements (e.g. Burris, 2004; Clauset et al., 2015; Celis & Kim, 2018; Hadani et al., 2012). The first and most obvious finding is that social class of origin indirectly influences the process of finding a tenure-track faculty job. As proponents of the social and cultural reproduction theory have long observed (Bourdieu & Passeron, 1977) and other prior studies show (Chiappa & Perez Mejias, 2019), the economic, social, and cultural assets inherited from one's family translate firstly into unequal access to selective and research-intensive universities at the undergraduate level.

Then secondly, the role of social class of origin continues influencing the opportunities to select top-ranked prestigious doctorate programs at foreign universities, although moderated by the resources that participants could leverage from their undergraduate

universities. Lower class participants determined their decision of studying for a doctorate degree in a foreign country on their ability to secure an income for their families while they were completing a doctorate degree. This is the case of Omar (low), who secured a pre-doctorate hire agreement with his undergraduate university that allowed him to guarantee his mother a monthly income. Upper social class participants, on the other hand, did not have to contribute to family income but could (in some cases) rely on their family wealth to fund part of their doctorate degrees at a foreign university. This is the experience of Antonio (upper social class), who was the only participant in the study who started his doctorate program without having secured a scholarship.

Subsequently, social class of origin continues mediating the chances of being hired at prestigious universities, because academic departments with high levels of prestige recruit candidates who completed their doctorate degrees at top-ranked foreign universities (Celis & Kim, 2018; Celis & Véliz, 2017). In line with what other studies show on the relationship between social class of origin and prestige of one's PhD-granting university (Chiappa & Perez Mejias, 2019; Perez Mejias et al., 2018), most of upper social class participants in this study went to better ranked PhD-granting universities as compared with their low-class and middle-class peers.

Furthermore, social class of origin particularly matters in the process of securing a faculty job because the relevance that networks play in the processes of academic hiring. This leads to the second most important finding of this article on the critical role of undergraduate universities in predicting faculty job placements in Chilean academia. As Celis and Kim (2018) demonstrated in an earlier study, industrial engineering academic departments at research-intensive universities prefer applicants who obtained their doctorate degrees at prestigious foreign universities. The stories of the participants in this article reflect that the academic units with the highest degree of prestige primarily hire their undergraduate alumni who studied at foreign universities. Two main elements explain this pattern of "inbreeding". First, one of the participants' current employers created plans to pre-hire their undergraduate alumni studying at prestigious foreign

universities. The goal was to respond proactively to the difficulties of recruiting academics with PhDs from highly prestigious foreign universities. Second, participants reported that faculty members on hiring committees prefer known candidates, if the other relevant criteria are equivalent.

This last statement is associated with the third finding of this study on the role of social class of origin in the formation of strong ties with professors and colleagues, and the importance of these strong ties in securing faculty positions. As defined by Granovetter (1973), strong ties are defined by relationships of mutual reciprocity, trust and numbers of years of the connections between participants and the members of their networks. Contrary to what I expected, participants from low and middle social class groups took less time to secure a faculty job than their peers from the upper social class. A close analysis of this phenomenon reflects that faculty from low and middle social classes, because of their lack of economic and informational resources, relied to a great extent on their former professors and mentors from both their undergraduate and doctorate degrees to leverage information and resources that did not circulate in their social class groups. This does not mean that participants from the upper social class did not develop strong ties with former professors and colleagues, but because of their family social class status, they accumulated a greater number of connections and opportunities which they could rely on beyond their former doctoral advisors and colleagues.

Yet, the size of their academic network and number of applications did not automatically guarantee an academic position. In line with what Pinto (2016) found in his study of how Chilean doctorate holders found academic jobs and what network theorists propose (Granovetter, 1995), the participants who took less time in finding a job were the ones who had well-stablished networks with professors who were knowledgeable about the hiring academic process.

In this context, it is worth mentioning that the evidence gathered does not entirely negate the human capital theory (Becker, 1967; Mincer, 1984; Schultz, 1970). None of the participants, regardless of

their social class of origin and their networks, would have obtained their current jobs if they had not completed their doctorate degrees and demonstrated their research productivity while in their doctoral programs. In fact, Francisco (middle social class)—who got a competitive grant after having studied and worked outside of Chile for the largest number of years—was the one who could negotiate his hiring process at a university significantly more prestigious than his former undergraduate university, albeit still not among the top research-intensive universities in Chile.

Conclusion

In sum, the stories of the participants in this study show that the process of faculty recruitment at prestigious academic departments might be (un)consciously excluding doctorate holders from the lowest class, due to the preference of these academic departments for recruiting *undergraduate alumni* who studied at top-prestigious foreign universities (Celis & Kim, 2018). Relatively few of these would be expected to come from lower class origins. Due to the fact that social class of origin is strongly associated with the academic quality of the undergraduate university attended (Canales, 2016), the barrier of access to the universities with highest prestige in Chilean academia seems more difficult to overcome for individuals from the lowest social class even when they could have obtained their doctorate degrees from prestigious foreign universities.

In light of these findings, future studies could review the importance of strong ties with influential professors in obtaining a tenure-track faculty position in Chilean academia, taking into consideration a broader spectrum of disciplinary fields and job status. Specifically drawing from the findings reported here, future studies could explore the process of seeking faculty jobs for doctorate holders who applied but could not secure a tenure-track faculty position in Chilean academia. A detailed analysis of the sociodemographic characteristics of these individuals, their disciplinary fields, and educational and professional trajectories would benefit the endeavor of understanding the possibilities and limitations of the promise of human capital in a highly stratified higher education system.

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Appendix

Protocol for Early Career Faculty in Engineering Departments.

1. Why did you decide to pursue a doctorate degree?
2. Potential follow up questions: Who helped you to decide whether or not to pursue a doctorate degree? When you were completing your bachelor degree, how aware were you of the option of studying for a doctorate?
3. And now, think about your undergraduate university choice. How did you select this undergraduate university versus others? What factors made you to select the university you picked?
4. To what extent, if it all, did your undergraduate experience influence your decision of studying a doctorate degree?
5. Please, walk me through the process of how you decided which university to apply for your PhD. Which considerations and factors did you consider?
6. What was your family situation when you started your PhD? Were you in a relationship? Did you have kids?
7. What was the process of looking for a job? Please, walk me through to the moment when you started looking for a job.
8. When did you start looking for a job? Which type of sources did you use to find this job? Who helped you? How many months were you looking? How many jobs did you apply for? How long?
9. From the open calls that you saw, what were the most attractive job positions? What made them so attractive? Were they all faculty positions?
10. Which positions did you apply for, and why?
11. What was the hiring process for your current position? Walk me through the different steps of the application process. How did you prepare your CV? What information did you include for this position, and why?
12. What characteristics of your profile as a candidate do you think were relevant to this job? Which do you think were the most important ones? What do you think helped you to get this job?
13. Taking into account your experience applying for faculty jobs and now being hired as a faculty member, what recommendations

would you give to early-career researchers interested in getting a job in academia? What information would you recommend them to include in their CVs?

14. In the USA is very common that faculty followed the academic path, because their parents or a close relative was working at universities as a professor. Does this statistic resonate with your interest for your academic career?

15. Are there any questions or comments that you would like to add about your experience in the process of faculty hiring that I have not asked you?