The Limits of Academic Merit in Chile: How Social Class of Origin Influences the Careers of Academics with Doctorate Degrees

Roxana Chiappa Baros

A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2019

Reading Committee:

Maresi Nerad, Chair
Andrés Bernasconi
Elizabeth Sanders
William Zumeta

Program Authorized to Offer Degree:
College of Education

University of Washington

Abstract

The Limits of Academic Merit in Chile: How Social Class of Origin Influences the Careers of Academics with Doctorate Degrees

Roxana Chiappa Baros

Chair of the Supervisory Committee:
Dr. Maresi Nerad
College of Education

Only a handful of empirical studies have examined the effects of social class on the careers of doctorate holders. Through a mixed-method approach, this dissertation analyzes to what extent and how the social class of origin of faculty with doctorate degrees influences their opportunities to compete for the most prestigious and highest paid positions in Chile. This country is one of the emerging economies with high degrees of social and income inequalities that has adhered to the principles of building human capital and its knowledge economy to increase its economic productivity. In the last decade, Chile has awarded 10,000 doctorate fellowships, which has allowed that a more significant number of individuals from low social class acquire doctorate studies. This rapid expansion of doctorate fellowships has increased the number of doctorate holders seeking academic jobs, the primary employment sector for this group.

The three articles contained in this dissertation reveal that social class of origin of faculty in Chile is still a relevant category to predict the opportunities of getting positions at the most prestigious universities and highest paid jobs. The first article quantitatively estimates the indirect and direct effects of social class of origin on faculty income. The second article qualitatively examines the procedures of faculty hiring at departments of economics and industrial engineering to understand whether hiring practices reproduce social class of faculty candidates during such proceedings. Lastly, the third article looks at the strategies that doctorate holders from different social class backgrounds use to find tenure-track faculty positions.

TABLE OF CONTENTS

INTRODUCTION 1

UNFOLDING THE DIRECT AND INDIRECT EFFECTS OF SOCIAL CLASS OF ORIGIN ON FACULTY INCOME 11

LIMITS OF ACADEMIC MERITOCRACY IN FACULTY HIRING PROCESSES IN HIGHLY STRATIFIED HIGHER EDUCATION SYSTEMS: INSIGHTS FROM THE CASE OF CHILE 60

SEEKING FACULTY JOBS: EXPLORING THE RELATIONSHIP BETWEEN SOCIAL CLASS OF ORIGIN AND HIRING NETWORKS IN CHILEAN ACADEMIA 117

CONCLUSION 162

DEDICATION

To the mystery of living with a curious/humble mind and a naked heart that understand the intrinsic interconnectedness of all beings and their fragility. (The main lesson of this doctoral experience.)

ACKNOWLEDGMENTS

What follows, it is an acknowledgment section of six pages. Six pages! Yes, because this PhD experience has been an entire-COLLECTIVE journey of crossing several oceans and a couple of deserts. It implied to unpack the many contradictions that hide within the exercise of studying Chile, social class, academia, from the USA. What a good lesson of remembering and gratitude!

Endless gratitude with my parents, Sara Baros and Juan Chiappa, for allowing me to create and spread my wings at an early stage of my life. They have supported my decisions unconditionally, even when these have contradicted their fundamental beliefs. From Copiapó -the land that limits the driest desert on Earth – Atacama Desert – to wherever I go, I walk with the certainty of their love, wisdom, and strength. Sara and Juan are the perennial versions of the desert flowers that bloom every four years thanks to the miracle of the rain.

I am heartfelt grateful with professor Maresi Nerad, my adviser. Her academic rigor, incommensurable support, and guidance across the years have awakened my interest to follow the professoriate path. Maresi, thanks in all the languages, to all what has shaped your life and allowed you to be who you are. You do not imagine how much your passion for learning, academic rigor, humility, and your giving spirit have modeled the path I am co-creating now with other colleagues.

I express my gratitude and acknowledgment to the professors that have contributed to my learning, particularly the ones who have provided feedback to the first drafts of this dissertation back in 2016. To professor Andrés Bernasconi, for his guidance, encouragement and understanding along the process; to professor William Zumeta for his detailed feedback and support in the multiple phases of defining research questions; to professor Elizabeth Sanders, for her guidance in statistical methods and her exemplary commitment to the learning of her students. Equally grateful of Dr. Mark Long who not only accepted to be the Graduate School

Representative but also contributed significantly to refine my research questions and methodology at the early stages of this dissertation.

To the many professors and colleagues at the College of Education at the University of Washington, who played a mentoring role without even knowing it. Special thanks to the professors Joy Williamson Lott, Joe Lott, Kara Jackson, Mike Knapp, Manka Varghese, Jondou Chen, Janine Jones, and Megan Bang. The power of their smile brought back the sunshine to Miller Hall when the clouds were too dark in Seattle. Extremely grateful of Marty Howell, Norah Fisher, and the many students who have served for the Office of Student Diversity and Inclusion (OSDI). Each OSDI member has been an unconditional ally of this collective journey.

To cross oceans and deserts, funding is an essential resource. Thanks to the government of Chile and its fellowship program Becas Chile that funded the first four years of this doctorate program. Many thanks to the Office of Research and Information Services (ORIS), where I worked as a research assistant from 2012 to 2016. This job allowed me to generate extra economic resources and learn about the administration of research grants and the multiple stages of the scientific discovery. Many thanks to my ORIS colleagues Robin Hendricks, Richard Fenger, Matt Portwood, Linda Gammon, who have always cheered me up, especially at the stages when I doubted that my ship would go through all the seasons. Likewise, I am incredibly grateful for the Office of Institutional Research at the College of Education, where I have worked as a research assistant for the last two years. Shanti Perumal and Melody Gilbert have given me the freedom and flexibility to complete this endeavor. I would not have finished this dissertation without their trust and understanding. A heartfelt thank you for both of you.

To my dear UW family and many academic colleagues in Higher Education. Gracias to the professor Angela Ginorio, who unconditionally have supported me from the very first day I

stepped in at the University of Washington. Equally grateful and inspired by my peers with whom I discussed extensively social justice, geographical inequalities, our inner colonizers, and all the contradictions of studying a doctorate in the USA when you come from the south. To my UW peers, Kira Geselowitz, Somin Neon, Gabriel de Los Angeles, David Phelps, Elba Moise, Jitpitcha Jarapayun, Ammara Kimso, Ellita Williams, Lorena Guillen, Cristina Gaeta, Emma Elliot, Daisy Alfaro, Miguel Jiménez, Weijia Wang, and many others, who held my hand when I doubted, and raise(d) their voices to speak up for what they believe. They, their stories, without even attempting it, have restored my trust in the power of collective and the role of research in re-distributing opportunities toward the ones who have historically been marginalized.

Big thanks to Sharon Stein (University of British Columbia), whose encouragement and vision inspire me to bring my critical voice back in my research agenda. To Cathy Gibson (Montana State University), Manuel González-Canché (University of Pennsylvania), Anita Gopal (University of Maryland), Sara Bano (University of Michigan), because I have learned through them how it is to stay loyal to their values while they transform the USA academia into a more welcoming space for everyone.

Special acknowledgment to the EU-funded Marie Curie Project University in the Knowledge Economy. This initiative allowed me to participate in summers schools in Portugal, New Zealand, and Denmark and connect with generous peers and professors. To Roger Dale, Susan Robertson, Susan Right, Corina Balaban, Jakob Williams Ørberg, Miguel Lim, Janja Komljenovič, and Sintayehu Alemu, thank you. Equally grateful of the opportunities given by the University of Kassel and the German Center in Higher Education Research and Sciences Studies and their researchers, with whom I continue discussing about academic careers and the stages of scientific development in different nations.

To my many colleagues living in Santiago and the southern part of Chile that are members of the RIECH –Network of Chilean Researchers in Chilean Education-. Special thanks to Daniela Véliz and Paulina Pérez who founded this organization, and whose friendship and professional guidance have contributed significantly to my understanding about the academic career in Chile. Paulina also became a close collaborator. Her rigor, passion for learning and statistical skills have been fundamental in this journey. Gracias amiga! Likewise, Ana Luisa Muñoz-García, Ivan Salinas, Juan Pablo Queupil, and Andrea Lira have fed the fire along the way. Thank you, because your hunger for justice have fed mine.

To the love and examples of my family and friends currently living in Copiapó. Conjointly to my parents, they were and continue being my first teachers of the scientific method, creativity, and passion. Tía Nélida, primita Claudette and primito Nibaldo, my high school friends -Claudia, Priscilla, Denisse, Yenny and Carolina-; all my dear uncles and aunts, my many cousins, my Nona, and my grandparents Pedro, Ema and Tito that already passed.

Thanks to my dearest Chilean and universal family of friends in Seattle. To my soul sisters Rukmini and Aliza, whose love, companionship and support were essential during the first years of starting this journey. No matters how many kilometers separate our bodies, our hearts are close. To Cesar Peña, for his friendship, vision and musical skills that contributed to create The Cumbieros band. To all the Cumbieros members, because my experience in Seattle would not be the same without their music and all the friends, I met dancing cumbia. To Gonzalo Thienel and Rodrigo Rodríguez for their genuine friendship, wisdom, and willingness to unpack their inner colonizers. To Ismael Castro, for being a teacher of profound lessons that changed my life forever. To Gabriela Castro and Claudio Mourgues, because their decision of celebrating love and joy is a good reminder of our agency. To Ursula Mosqueira and Camila Tejo, for dancing and sharing the

travel of healing. To Mónica Zepeda and Luis Sobarzo, because their example of resilience, resistance, and love always reminds me of the horizon for social justice and our option to exert it at any moment.

To my friends that are walking the path of academia while they commit with a larger project of love for life and community. To Rebeca Caribeña, Bert Kempfe Camila Tobar, Benjamin Palacios, Indre Bar, Felipe Sandoval, Maru, Pancho, María Eugenia Rojas, Tomas Arenas, Francisca Gómez, Felipe Lagos, Barbara Droguett, Alejandro... all your joy, tears of laughter and their natural enjoyment for sharing have nurture my soul so many times.

To Eva Lombard, because her trust and affection helped me to complete the year of 2018. To the special ones, Merz family -Shanta, David, Erika, and Martin- for their help, emotional and material support. The last part of this journey would not have been as unique and balanced without them.

To my dearest soul-siblings Sol Clavería (nature), Karin Baeza (all is perfect), Marijo Sandoval (trust), Eduardo Muñoz (let it go), Michel Riquelme (I am always here), because their wisdom and love rescued me in the darkest nights, and continue rescuing me and reminding me that we are all mirrors from each other. To Jill Twist, because her writing skills and encouragement were invaluable source of inspiration along the process.

To my soul sisters and allies living in Seattle, with whom I have spent most of the time in the last years of this journey. To Iris Viveros (Muxer Remolino), one of my favorite dancers... Her fire has warmed up the coldest snowy days in Seattle. To Debi Talukdar, whose wisdom and inquiry, have reflected the light in me when I have not seen it. To Ziyan Bai (我爱你), with whom I have walked a similar path since the very first day of the journey. No words can describe our universal sisterhood. To Susanna Damgaard, the walker of life. Sue and I co-created the home I

want to preserve forever. To María Vignau, mirror and ally in all dimensions, dancer and sociologist of the south. To Erika Merz, because her love and spirit has brought the sunshine back in the rainy days. The existence of all of these beings demonstrate the power of the smile. Thanks to them... for resisting, trusting, dancing through the storm, loving and giving it all.

To my dear dance tribe that gathers at Om Culture, one of my favorite places on Earth. To the collective and each one of you that creates the intention of liberation through movement. To Scott for his endless generosity. Scott has held the tribe members along all spectrum of seasons. To Carol, Ron, and Jim, the wisest members of the tribe. Their understanding of the fragility of life have deepened my sense of gratitude.

To the first nations of the Pacific Northwest... I have benefited from their struggle, generosity, and wisdom of protecting their lands, coast and animal persons. To all the beings and processes that came before me and allowed me to receive an education. To all the people and hearts that have shaped my thinking and ways of relating... and the billions of billions of factors and interactions that have occurred at this land (Seattle). That endless and contradictory chain of synchronicities allows me to be here, now, in this body, completing this journey, more aware that the PhD was only a path to see that we are all one.

Gracias.

INTRODUCTION

The number of doctorate graduates in Chile has almost doubled in the last decade (RICYT, n.d.). Expansion of undergraduate enrollment – estimated to have grown from 400 thousand in 1998 to 1.15 million in 2018 (MINEDUC, 2018) – and 10,000 doctoral fellowships awarded from 2008 to 2015 – has likely increased the number of individuals from working class backgrounds interested in pursuing a doctorate (CONICYT, 2016, 2018).

In this context of expansion and diversification of the population with doctorate credentials, a key question for educational scholars is to understand how the PhD degree enables individuals from different social backgrounds to compete for a position in the labor market. This question is particularly relevant for a country like Chile, which ranks fourth in the list of Latin American countries with the highest levels of income inequality (The World Bank, n.d.a). Chile has the highest level of income per capita per year (PPP USD$27,963) (INE, 2018) and the second lowest levels of poverty (8% of the population lives with less than US$ 4 per day) in the Latin American region (The World Bank, n.d.a), but 50% of its population earn less than PPP USD 18,000 a year (INE, 2018)[1].

This income inequality is reflected at all levels of social life (PNUD, 2017), including the type of educational institutions that people from different classes attend from preschool to university. Some research shows that this chain of cumulative socioeconomic (dis)advantages associated to the social class of origin persists among college degree completers, even among those who graduated from the same undergraduate program and universities of equivalent prestige (Núñez and Gutiérrez, 2004; Urzúa, 2012).

[1] Values were updated according to the Chilean Index Price of Consumption (IPC) rate (2.8%), and then, calculated with an exchange currency of USD Purchasing Power Parity (PPP) of 1 USD PPP =CL 403.864.

However, significantly less is known at the doctoral level. Indeed, reliable data about the social class of origin of the population with doctorate degrees does not exist in Chile. Some data that describe doctorate fellowship recipients between 2008-2015 shows that around 29% of the fellows went to public high schools, which in the context of Chile is associated with low social class of origin. The remaining 70% is equally distributed between doctorate recipients who went to private high schools (upper class) and subsidized high schools (middle class) (CONICYT, 2016, Mizala and Torche, 2012).

Further, empirical evidence regarding the career paths of doctorate holders in Chile is not only scarce (Brunner et al., 2010; MINECON, 2015, 2016; Pinto, 2016), but it has paid little attention to whether job opportunities differ significantly among doctorate holders who grew up in different social class groups. Likewise, literature on faculty careers in Chile, whose ranks include both doctorate holders and professionals with lesser academic credentials, is an emerging field of study (e.g. Bernasconi, 2008, 2010; Berríos, 2014a, 2014b; Celis and Kim, 2018; González, Brunner, and Salmi, 2013; Véliz-Calderón et al., 2018). Official figures show that around 80% of the doctorate holders living in Chile work in the academic sector (MINECON, 2012, 2015), but no empirical study has analyzed how and to what extent social class of origin influences the careers of faculty with doctorate degrees in Chile. Similarly, the international literature on doctorate education and faculty has paid little attention to the role of social class of origin on the careers of faculty, as compared with the number of studies that have analyzed the effect of gender and race on faculty income and promotion (Jungbauer-Gans and Gross, 2013; Torche, 2018; Olfield, 2010).

The three articles in this dissertation contribute to filling this knowledge gap using a mixed-method approach, that progresses from a quantitative analysis into qualitative analyses on the

processes of faculty hiring and mechanisms to find faculty jobs (Creswell, Piano, and Clark (2011). The first article quantitatively estimates the direct and indirect effects of social class on faculty income; whereas the second and the third articles qualitatively analyze the faculty hiring process and the strategies that early-career doctorate holders employ to secure faculty jobs, respectively. Conjointly, these three articles answer two overall questions: To what extent does the social class of origin of faculty in Chile influence their career? What are the mechanisms of social class reproduction in Chilean academia?

To conceptualize social class and the mechanisms of social reproduction, I heavily rely on Bourdieu's theoretical work (Bourdieu, 1983; 1985, 1987) and the work of Bourdieu and Passeron (1977) on how education as a field reproduces the inequalities of society. Social class positioning depends on the amount and exclusivity of different types of capital—economic, social, and cultural—that individuals use to secure a position that guarantees power and status.

The first article - Unfolding the Effects of Social Class of Origin...- utilizes the Career Doctorate Holders survey (version 2011) to identify the social class of origin of doctorate holders and estimates the direct and indirect effect of social class of origin on faculty levels of income. A latent class analysis (LCA) (Wang and Wang, 2012) was conducted, using several of the survey's variables, to identify the social class of origin of the doctorate holders. In this analytical framework, social class of origin is an unobserved characteristic among the current doctorate holders, but it is manifested in the type of high school attended (public, subsidized, and private) and the level of parents' education. Four categories of social class groups were identified – upper, middle-upper, middle-low, and low –.

Then, a path analysis was conducted to account for the cumulative effect of social class on the faculty members' level of income. Findings confirm the hypothesis that social class of origin

has a significant indirect effect on faculty income, associated with the unequal opportunities to attend prestigious undergraduate and PhD-granting universities for individuals of different social class backgrounds. It also shows that doctorate holders from the lowest social class group (none of the parents finished high school, attended public high school) receive a lower level of income than their upper-class peers (both parents had a college degree, attended private high school), even after controlling for the level of prestige of undergraduate and PhD universities and other relevant variables. The direct effect of social class was no statistical significance for the rest of the groups.

This latest finding raised several questions concerning how academic departments conduct faculty hiring processes in Chilean academia and whether the hiring procedures exert a potential negative bias against individuals from the lowest social classes of origin. It also posed potential lines of inquiry about the role of academic networks in securing tenure track positions, as compared with the scientific productivity of doctorate holders.

To answer the questions above, I conducted a qualitative case study on the processes of faculty hiring at industrial engineering and economics departments at four universities. A maximum variation technique (Merriam, 2009) was used to identify universities located within the same geographical area (Metropolitan Region), but that have a different ownership status (private traditional, public, new private) and represent different levels of research capacity, institutional prestige and sociodemographic profile of undergraduate students.

I conducted semi-structured interviews (Patton, 2001) with 46 faculty who have directly participated as faculty hiring committee members or have been involved in faculty hiring decisions. I selected economics and industrial engineering departments because these fields represent academic fields that have a higher degree of professionalization of their academic career (Bernasconi, 2010) and offer undergraduate programs that are in high demand of undergraduate

enrollment as compared with other disciplinary fields (MINEDUC, 2018). Together, these characteristics assume that academic departments in these fields are particularly in need of hiring doctorates to teach and conduct research in their disciplinary areas and the resources to guarantee full-time, tenure-track academic positions.

Faculty members such as deans, department chairs and faculty hiring committee members were extensively asked about the faculty hiring process conducted by their respective academic departments; this information was complemented and contrasted with a set of institutional documents about hiring policies and procedures. Additionally, all faculty were asked about their own experience searching for faculty jobs.

Drawing from this empirical evidence, the second article – "Limits of Academic Meritocracy in Faculty Hiring Processes in Highly Stratified Higher Education System: Insights from the Case of Chile" – analyzes to what extent the organizational procedures of faculty recruitment and selection of the short list of applicants adhere to the meritocratic ethos of science (Merton, 1973). The normative ethos of science, briefly described here, poses that the scientific institutions are the most meritocratic social institutions, mainly because their reward system focuses on the research outcomes or potential rather than on the socio-demographic characteristics of researchers. I selected these two hiring procedures, instead of other stages of the processes (job interviews, job talk, identification of final candidates, negotiation, final decision about hiring), because faculty are less exposed to identify candidates' social class origin that may be manifested in other signs through face-to-face interactions (e.g. linguistic cues, dressing code, appearance, etc.). During recruitment and shortlisting of applicants, faculty in hiring committees are supposed to evaluate candidates just on paper.

Findings show that not all academic units have open recruitment procedures and formal job search committees for recruiting candidates. Likewise, academic departments within the same disciplinary field receive a different number of applications according to their levels of research capacity. Academic departments are seeking candidates who have a high number of publications, have graduated from top-ranked international universities, have teaching and disciplinary expertise in the areas needed by the academic departments, and are likely to accept the job offer. These criteria, for the most part, go along with the meritocratic principle discussed earlier, but findings show that faculty make a subjective valuation on the likelihood of "who is more likely to accept the job offer" that leaves a lot of room for unconscious bias.

All academic departments lack mechanisms to prevent conscious and unconscious bias in hiring processes. Faculty in hiring committees, at economics units, in particular, exclude two types of candidates: a) the candidates that seem very competitive and likely will receive invitations for job interviews from a good number of top-ranked universities; and b) the candidates who belong to other academic networks and probably will accept a job offer from their respective network.

Finally, the third article – Seeking a Faculty Job: Exploring the Relationships between Social Class of Origin and Hiring Networks in Chilean Academia – analyzes how early-career faculty in engineering (N=10) used their academic networks to find their current faculty jobs. The goal of this article was to elucidate how the social class of origin influences the configuration of networks that enable individuals to secure a faculty job. To develop this article, I exclusively considered the group of early career academics who held a doctoral degree in engineering and were working in engineering departments. Faculty in engineering represented a more diverse social class background than faculty in economics. Findings show that social class of origin mediates the academic network configuration of faculty-job seekers through unequal opportunities for attending

prestigious Chilean undergraduate universities, and subsequently, unequal chances of studying for a doctorate at top-ranked foreign universities. Only upper-class candidates who completed their doctoral studies at top international universities were capable of securing positions at the top research-intensive Chilean universities.

Nevertheless, findings also show that these conditions – upper-class and foreign PhD credentials – do not guarantee a faculty position, unless faculty job seekers have ties with professors who are involved in hiring decisions or demonstrate exceptional research productivity.

Together, the three articles reflect that the effect of social class of origin of faculty does not disappear after the completion of the PhD, but gets reproduced, partially through unequal opportunities for entering prestigious undergraduate and foreign PhD-degree universities that influence the development of their networks. Recruitment of candidates through networks and absence of formal mechanisms to account for and prevent unconscious bias along the process of faculty hiring contribute to maintaining the distance between the academics who grew up in upper and lower social class status.

In what follows, articles are organized in the same order as were described and each one of them stands on its own. Finally, a conclusion section discusses the main mechanisms through which social class of origins of faculty gets reproduced in Chilean academia.

References

Bernasconi, A. (2010). La apoteosis del investigador y la institucionalización de la profesión académica en Chile. *Estudios Sobre Educacion*(19), 139-163.

Berríos, P. (2014a). La profesión académica en Chile: Crecimiento y profesionalizacion. In A. Bernasconi (Ed.), *La Educación Superior en Chile: Transformación, Desarrollo y Crisis*. Santiago: PUCH.

Berríos, P. (2014b). *The academic life of part-time professors in Chile* (Doctoral Dissertation). State University of New York, Albany, Albany. Retrieved from http://pqdtopen.proquest.com/doc/1648172558.html?FMT=ABS

Bourdieu, P. (1983). The field of cultural production, or the economic world reversed. *Poetics, 12*(4-5), 311-356. doi:10.1016/0304-422x(83)90012-8

Bourdieu, P. (1985). The social space and the genesis of groups. *Theory and Society, 14*(6), 723-744.

Bourdieu, P. (1987). What makes a social class? On the theoretical and practical existence of groups. *Berkeley Journal of Sociology, 32*, 1-17.

Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society and culture*. London/Beverly Hills: Sage Publications.

Brunner, J. J., Meller, P., Ariztía, T., Ossandón, J., Muñoz, M., Scheele, J., & Berríos, P. (2010). *Doctores en ciencias e ingeniería: trayectorias de estudio y situación laboral*. Retrieved from http://www.academia.edu/2950763/Doctores_en_Ciencias_e_Ingenier%C3%ADa_Trayectorias_de_Estudio_y_Situaci%C3%B3n_Laboral

Celis, S., & Kim, J. (2018). The making of homophilic networks in international research collaborations: a global perspective from Chilean and Korean engineering. *Research Policy, 47*(3), 573-582. doi:10.1016/j.respol.2018.01.001

CONICYT. (2016). Base de datos de becarios y postulantes a programas de Becas CONICYT y Becas Chile. Unpublished Data Set.

CONICYT. (2018). Becarios Programa Formación de Capital Humano Avanzado. Retrieved from https://app.powerbi.com/view?r=eyJrIjoiMjFiZjBhOWMtMmI5ZS00NzVkLWIwNGMtNjhjOTAxYTUzYjY5IiwidCI6ImU3M2FmMWRlLWU5ZTYtNGM0OS1iMWUxLWZjNjg3ZjM2MjY0NyIsImMiOjR9

Crane, D. (1969). Social class origin and academic success: the influence of two stratification systems on academic careers. Sociology of Education, 42(1), 1–17. https://doi-org.offcampus.lib.washington.edu/10.2307/2111805.

Creswell, J. W. (2011). *Designing and conducting mixed methods research* (2nd ed. ed.). Los Angeles: Los Angeles : Sage Publications.

González, S., Brunner, J. J., & Salmi, J. (2013). Comparación internacional de remuneraciones académicas: un estudio exploratorio. *Calidad en la educación*(39), 21-42. doi:10.4067/S0718-45652013000200002

INE. (2018). *Nueva encuesta suplementaria de ingresos 2017*. Retrieved from Santiago: https://www.ine.cl/docs/default-source/ingresos-y-gastos/esi/ingreso-de-hogares-y-personas/resultados/2017/sintesis_esi_2017_nacional.pdf

Jungbauer-Gans, M., & Gross, C. (2013). Determinants of success in university careers: findings from the German academic labor market. Zeitschrift für Soziologie, 42(1), 74–92. https://doi-org.offcampus.lib.washington.edu/10.1515/zfsoz-2013-0106.

Merriam, S. (2009). *Qualitative Research. A guide to design and implementation.* San Francisco: Jossey-Bass.

Merton, R. K. (1973). *On social structure and science*. Chicago: University of Chicago Press.

MINECON. (2012). *Career of Doctorate Holders Survey Version 2011 - CDH*. Unpublished Data Set.

MINECON. (2015). Presentación principales resultados proyecto CDH, año referencia 2011. Retrieved from http://www.economia.gob.cl/wp-content/uploads/2015/01/Presentaci%C3%B3n-principales-resultados-CDH.pdf

MINECON. (2016). *Principales resultados proyecto CDH año de referencia 2014.* Retrieved from Santiago: http://www.economia.gob.cl/wp-content/uploads/2016/05/Presentaci%C3%B3n-CDH-2015.pdf

MINEDUC. (2018). *Compendio histórico de educación superior*. Retrieved from: http://www.mifuturo.cl/index.php/estudios/estructura-compendio

Núñez, J., & Gutiérrez, R. (2004). *Classism, discrimination and meritocracy in the labor market: The Case of Chile*. Retrieved from Santiago: http://www2.facso.uchile.cl/sociologia/1060225/docs/chile/nunez.pdf

OECD. (2017). *Making decentralisation work in Chile: Towards stronger municipalities, OECD multi-level governance studies*. Retrieved from Paris: http://www.oecd.org/publications/making-decentralisation-work-in-chile-9789264279049-en.htm

Oldfield, K. (2010). Our cutting edge isn't cutting it: why public administration should be the first discipline to implement a social class-based affirmative action plan for hiring professors. Administration & Society, 41(8), 1016–1038.

Patton, M. (2002). *Qualitative Research and Evaluation Methods*. California: Sage Publications.

Pinto, C. (2016). Reflexiones sobre la inserción laboral de doctores en universidades chilenas. *FRONTERAS – Revista de Ciencias Sociales y Humanidades, 3*(1), 109-124.

PNUD. (2017). *Desiguales. Orígenes, cambios y desafíos de la brecha social en Chile*. Retrieved from Santiago: https://docs.google.com/viewerng/viewer?url=http://www.adnradio.cl/docs/2017061691e72bce.pdf

RICYT. (n.d.). Doctorates. Retrieved from: http://db.ricyt.org/query/AR,BO,BR,CA,CL,CO,CR,CU,EC,ES,GT,HN,JM,MX,NI,PA,PE,PR,PT,PY,SV,TT,US,UY,VE,AL,IB/1990%2C2013/CDOCTORADO

The World Bank. (n.d.a). *International Comparison Program database - Poverty & Equity*. Retrieved from: http://povertydata.worldbank.org/poverty/country/CHL

The World Bank (n.d.) GDP per capita, PPP (current international $) Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?locations=CL&name_desc=true

Torche, F. (2018). Intergenerational mobility at the top of the educational distribution. *Sociology of Education, 91*(4), 266-289. doi:10.1177/0038040718801812

Urzúa, S. (2012). The economic returns to higher education in Chile: Revising the foundations of 30 years of public policies. *Estudios Públicos* (125), 1-52.

Véliz-Calderón, D., Theurillat, D., Paredes Walker, V., & Pickenpack, A. (2018). The Evolution of the Academic Profession in Research-Centered Universities in Chile. *Education Policy Analysis Archives, 26*(17).

Wang, J., & Wang, X. (2012). Structural equation modeling with Mplus: methods and applications. Chichester: Wiley/Higher Education Press.

UNFOLDING THE DIRECT AND INDIRECT EFFECTS OF SOCIAL CLASS OF ORIGIN ON FACULTY INCOME

This study is the first of three dissertation papers on the effects of social class of origin on the careers of faculty. It was recently been published by the scholarly journal, *Higher Education*.

Chiappa, R. & Perez Mejias, P. (2019). Unfolding the direct and indirect effects of social class of origin on faculty income. *Higher Education. https://doi.org/10.1007/s10734-019-0356-4*

Abstract

Studies on faculty income have typically focused on disparities associated with gender and race. Surprisingly, much less attention has been paid to the social class background of university faculty and how it might affect their pathways to the professoriate and their opportunities to access high-paying positions. We attempted to address this gap in the literature by looking at a sample of faculty working at Chilean universities. We used a path analysis approach to estimate not only the direct effects of social class of origin on income but also the indirect mechanisms through which social class of origin influences faculty income. We posed two alternative conceptual perspectives with regard to the effects of social class on income—social reproduction and human capital. We found that faculty who come from the upper social class have access to higher-quality undergraduate education and to more prestigious PhD-granting universities and they report higher earnings as compared with those who come from a low social class. These findings resemble a dynamic of cumulative educational advantages that is consistent with the theory of social reproduction. Although it could be argued that the positive effect of prestige of the PhD-granting university on income is in line with the human capital theory, we claim that such effect cannot be analyzed independently from the direct and indirect relationships that exist between social class of origin and the prestige of the university from which faculty obtained their doctorate degrees.

Introduction

Very few studies have looked at the effect of social class on the education and career paths of faculty (Kniffin 2007; Oldfield 2010), despite the vast amount of evidence showing that the social class of origin is associated with later educational achievement, occupational status, and income (Breen and Johnson 2005). A good deal of research on the academic profession has examined the role of gender and race in faculty career experiences and salaries (e.g., Nettles et al., 2000; Morrison et al., 2011; Perna 2001, 2005; Webber and González-Canché, 2015), but surprisingly, much less attention has been paid to the social class background among university faculty and how it might affect their pathways to the professoriate and their job opportunities in academia. Likewise, it is puzzling that while higher education researchers have long and widely examined how social class of origin determines the opportunities of students to access and successfully graduate from college, there has been much less attention paid to the effects of social class on the education and career paths of faculty (Barratt, 2011; Mullen et al., 2003; Oldfield and Conant, 2001; Ostrove et al., 2011).

It is widely agreed among researchers that access to higher education is highly stratified by social class and that individuals from the lowest social classes are less likely to attend and graduate from elite, highly selective, and prestigious universities than their more privileged peers (e.g., McDonough, 1998; McDonough and Fann, 2007; Walpole, 2003). Moreover, research has found that social class plays an important role in who can access graduate education, which is a stepping stone in the pathway to the professoriate (Ostrove et al., 2011). Among those who pursue doctoral studies, social class of origin is also associated with the level of prestige of the graduate university attended (Crane, 1970; Lang, 1984, 1987). In turn, the prestige of the university from which faculty

obtained their doctorate degrees strongly predicts the level of prestige of the university where they are employed as well as their ability to secure tenure-track and relatively high-paying faculty positions (Caplow and McGee, 1958; Clauset et al., 2015; Burris, 2004; Hadani et al., 2012; Headworth and Freese, 2015). Also, it has been found that universities with high levels of prestige tend to disproportionately recruit and hire faculty from upper class backgrounds (Crane, 1969, 1970; Kniffin, 2007; Lang 1984, 1987; Oldfield and Conant, 2001), while 2-year colleges hire relatively more faculty who are first-generation college graduates and come from low-income backgrounds (Kniffin, 2007).

Many of these studies rely on the theory of social reproduction to explain these successions of effects triggered by social class (Bourdieu and Passeron, 1977). Reproduction theorists propose that education acts as a stratification, or sorting, mechanism, which contributes to the transmission from one generation to the next of one's position in the social hierarchy, thus perpetuating the existing social order (Breen and Johnson, 2005; Dannefer, 2003). From this viewpoint, cumulative advantages begin to accrue during childhood and schooling derived from having higher income and well-educated parents, and conversely, a cascade of disadvantages begin for children born into families of lower socioeconomic backgrounds (Oldfield and Conant, 2001). These ideas run counter to those posed by human capital theorists, who instead propose that education is a motor of social mobility and that increasing investment in education makes individuals more productive, which in turn translates into higher earnings regardless individuals' social class of origin (Dannefer, 2003).

Overall, the earlier cited studies suggest that universities are stratified by social class not only in terms of the students they admit, but also in terms of the faculty they hire. Based mostly on social reproduction theories, these studies also suggest that the social class of origin of faculty

is a determinant in the educational path they follow, the type of institution where they are employed, and consequently in their level of income. However, only a handful of studies have used empirical data to statistically analyze the chain of effects of social class of origin on the educational path and the levels of earnings of college and university faculty (González-Canché, 2017; Jungbauer-Gans and Gross, 2013; Oldfield and Conant, 2001). Also, it is still a matter of debate whether social class is reproduced in academia or if this sector rewards faculty according to their productivity regardless of their social origins.

With the aim to contribute to this debate and fill this gap in the literature, we investigated the effect of social class of origin on income as mediated by the quality and prestige of the undergraduate and PhD-granting universities of doctorate holders working in faculty positions at Chilean universities. Chile lends a particularly interesting and unique policy context to conduct such a study. In the last decade, the Chilean government has funded more than 10,000 fellowships to pursue doctorate degrees in Chilean and foreign universities (CONICYT, n.d.-a), reaching in its labor force one of the highest numbers of doctorate holders per capita in the Latin American region (RICYT n.d.). Much of the motivation of the Chilean policymakers to implement this initiative rests on the assumption that a higher investment in human capital will result in economic growth that will raise the levels of incomes of the country (Hanushek, 2013). Following this rationale, which is aligned with human capital theories, the Chilean government envisioned that this policy would position education as a mechanism not only to increase productivity but also to advance social mobility (CNIC, 2006). Nonetheless, a recent study about the "ingrained classism" in Chile calls into question this rationale (PNUD, 2017). The results of this study indicate that among low- and middle-class groups predominates a critical discourse that, despite the effort put into studies

or work, the best positions are forbidden for most Chileans, because the upper classes privilege their own and capitalize on their upper-class origin and social networks to access high-paying jobs.

Taking advantage of the policy context of Chile, we analyzed the effect of social class of origin on faculty income, considering also the preceding effects of social class on the quality and prestige of the universities attended. We draw from the Career Doctorate Holder Survey (CDH) developed by the Organization for Economic Cooperation and Development (OECD), and used a path analysis approach to unpack the causal relationships between social class of origin, quality of undergraduate university, prestige of PhD-granting university, and faculty income. Our approach allowed us to estimate not only the direct effect of social class of origin on income, but also to explore whether there are indirect mechanisms through which social class of origin influences faculty income.

Policy Context

Income inequality in Chile

Chile has the highest level of income per capita per year (PPP USD$22,450) and the second lowest levels of poverty (8% of population live with less than USD$4 per day) in the Latin American region (The World Bank, n.d.). However, less than 70% of the Chilean population earns the average income (INE, 2017). The income after redistribution, which considers leveling factors such as social benefits and subsidies, makes little difference in reducing inequality in Chile. This is mostly due to regressive tax policies that cause relatively heavier tax burdens on the poorer sectors of the population and reduce even more the already low income of the poor as well as their chances of upward social mobility (OECD, n.d.).

Social stratification of the Chilean system of education

Chile's high level of income inequality is mirrored by an educational system highly stratified by socioeconomic status. As for elementary and secondary schools, 94% of students in private schools (private ownership, completely paid by families) come from the two wealthiest income deciles, subsidized schools (private ownership, family pay a co-payment and the rest is subsidized by the state) mostly serve middle-income students, while more than two thirds of students in public schools (public ownership, completely free) come from the bottom half of the income distribution (Mizala and Torche, 2012). It has been shown that students attending private high schools in Chile are exposed to a more rigorous academic curriculum that not only provides them with a better academic preparation as compared with students in publicly funded schools, but also allows them to learn English as a second language (Matear, 2008; MINEDUC, 2015; Perez Mejias, 2012).

In higher education, there are several studies (e.g., Canales, 2016; Orellana, 2011; Valdivieso et al., 2006) showing that access to higher education is highly stratified by social class. Students whose parents have lower educational attainment and low-skilled jobs are less likely to pursue higher studies and are overrepresented in open-access and vocational colleges, while most students whose parents have college degrees and high-paying jobs go to selective degree-granting colleges. Some research suggests that this pattern of stratification persists after college graduation (Núñez and Gutiérrez, 2004; Urzúa, 2012). Looking at graduates with a business major at a Chilean research-intensive university, Núñez and Gutiérrez (2004) measured the effect of social class on earnings, relying on three proxies: socioeconomic status of the graduate's current neighborhood, socioeconomic status of their high school attended, and a subjective measure of social class based on family last names. Their model, which included a set of relevant variables of cognitive skills and professional experience, showed that the combined effects of their three measures of social

class yielded earnings gaps of 30 to 35% between upper and lower socioeconomic status (SES) graduates, keeping all other factors constant. This study only considered graduates studying one major at one institution, and as such, the results cannot be applied to the rest of the professionals in the Chilean labor market. However, it raises the question of whether the labor market for high-skilled individuals reserves better paid job positions preferentially to individuals who come from upper classes, regardless of their academic credentials.

Faculty in Chile

By 2017, there were 87,216 faculty members working in Chilean higher education in tenure-track positions, but only 12% of them held doctorate degrees (MINEDUC, 2017). Among faculty who held doctorate degrees, 90% had a full-time position and were mostly distributed across research-intensive universities, while the remaining 10% had part-time jobs at more than one university (MINEDUC, 2017). As for working conditions of part-time faculty, the few research studies in this area (Berríos, 2014a; Simburger and Neary, 2016) show that holding a PhD does not guarantee a full-time faculty job. Simburger and Neary (2016) report the experiences of what they call “taxi professors,” who are hourly paid or part-time faculty and work in more than one institution, thus forcing them to commute across the city. Their study reveals that some PhD holders who returned to Chile after their graduate studies abroad had no choice but to work as taxi professors. It is estimated that more than 60% of the professoriate works as part-time or hourly paid faculty (MINEDUC, 2017) and that most of the teaching is carried out by these faculty (Simburger and Neary, 2016). Part-time and hourly paid positions are characterized by relatively poor work conditions, absence of benefits (e.g., health insurance), and short-term contracts (Guzmán-Valenzuela and Barnett, 2013). The poor contractual conditions of these faculty are

usually accompanied by strict teaching institutional guidelines and rigid standards that threaten academic freedom (Guzmán-Valenzuela and Barnett, 2013; Simburger and Neary, 2016).

Studies on the factors that influence income of faculty in Chile barely exist. González and colleagues (2013) developed one of the few studies on Chilean faculty income, at least the only one we found for the Chilean case. González and colleagues found dramatic income gaps among faculty with similar professoriate status within a sample of private and public universities. Looking exclusively at full professors, the average annual income was USD$60,787. At public universities, income ranged from USD$34,416 to USD$214,439, whereas at private universities, professors reported an average income of USD$71,055 ranging from USD$40,675 to USD$183,201.1

Regarding hiring practices, some research suggests that research-intensive universities tend to hire their own undergraduate alumni who completed their PhD degree at foreign universities (Celis and Kim, 2018). Others argue that Chile's higher education system is going through a process of transition, in which it is progressing from an "amateur" academia toward the professionalization of the career of professorship by establishing more structured and standardized processes and sets of criteria to recruit, hire, and reward faculty (Bernasconi 2010; Berríos 2014a, b).

Literature Review

The few quantitative studies that have included a measure of social class of origin to examine educational trajectories and career outcomes of faculty suggest that the social class of origin gets reproduced through a dynamic of cumulative advantages (Bourdieu, 1988; Crane, 1969, 1970; Lang 1987) in which upper social class individuals are more likely than their peers from lower social classes to enter doctoral programs (Bornmann and Enders, 2004; Mullen et al., 2003; Ostrove et al., 2011; Triventi, 2013), select disciplinary fields that are associated with higher social

status or economic reward (Bourdieu, 1988; González-Canché, 2017), and be admitted into universities of higher levels of prestige (Crane, 1969, 1970; González-Canché, 2017; Lang 1984, 1987; Jungbauer-Ganss and Gross, 2013; Ostrove et al., 2011). In these studies, the prestige of universities and academic departments is typically captured by national ranking systems and/or international university classifications, such as the Academic Ranking of World Class Universities (ARWU), the Times Higher Education World University Rankings (THE), and the QS World University Ranking (QS).

Some empirical studies show that faculty hired in prestigious or research-intensive universities disproportionally come from upper social classes (Bourdieu, 1988; Crane, 1969, 1970; Kniffin, 2007; Oldfield and Conant, 2001). However, the reviewed studies are limited in their abilities to ascertain whether the advantages or disadvantages associated with social class persist among doctorate holders who graduated from equivalently prestigious universities. These limitations relate either to the use of non-inferential statistical methods (Bourdieu, 1988; Crane, 1969, 1970; Lang, 1984) or to the absence of a measure of institutional prestige of the PhD-granting university (Hartmann, 2010; Oldfield and Conant, 2001).

An exception is the work of Jungbauer-Gans and Gross (2013), who studied the effects of social class and institutional prestige and other variables on the time that doctorate holders took to secure faculty tenure-track positions in Germany within three disciplines: mathematics, law, and sociology. The prestige of the PhD-granting university did not have a significant effect on the outcome variable in any of the three disciplines included in the study. According to the researchers, this may be because German universities tend to have equivalent academic reputations. As for social class of origin, Jungbauer-Gans and Gross utilized parental education and social status of the parents' occupation as proxies of the social class positioning of doctorate holders, but they

included one of the two variables in each of the respective models, due to issues of multicollinearity. Each additional year of parental education had an effect on securing a tenure-track position in a shorter time for doctorate holders in law, whereas the social status of parent's occupation had an effect only for those in mathematics. None of these proxies of social class had a significant effect for doctorate holders in sociology. Overall, this study demonstrated that the effect of social class on securing tenure-track positions varies across disciplines.

Theoretical Framework

We propose a theoretical framework within two alternative perspectives regarding the role of social class of origin on faculty salaries. On one hand, social and cultural reproduction theory (Bourdieu and Passeron, 1977) poses that the educational system reinforces the stratification order in society. The notion of social class within this framework depends not only on the means of production and economic assets, but also on the levels of cultural and social capitals (Bourdieu, 1987). Social capital refers to the potential social gains associated to the membership and ties to specific social groups and institutions of power, whereas cultural capital refers to exclusive educational credentials and knowledge that are highly valued by predominant societal groups. These forms of capital, which are convertible and interdependent, shape the lifestyle (habitus) of individuals within the same social class and make them clearly distinct from individuals who belong to a different social class group.

From the viewpoint of social reproduction theory, faculty from the upper social class likely had access to better schooling options than their peers from low social class. As such, having attended high-quality schools allowed upper-class faculty not only to acquire higher levels of cultural capital, but also to increase their social capital by growing social ties with their well-off classmates. These advantages made faculty from upper social class more competitive when

applying and being admitted to highly prestigious undergraduate and PhD-granting universities (Crane 1969, 1970). Also, faculty from more privileged backgrounds probably had more opportunities to be exposed to international experiences, such as obtaining their highest degree in a foreign country, which is highly valued in academia, particularly in developing countries (Welch, 1997). In turn, these educational, cultural, and social advantages accumulated by upper-class faculty provided them with higher chances of being hired at prestigious institutions that offer higher paying jobs than their lower-class peers (Bourdieu, 1987; Burris, 2004; Hadani et al., 2012; Welch, 1997).

On the other hand, human capital theory conceptualizes education as an investment through which individuals gain skills that make them more productive and competitive (Becker, 1967; Mincer, 1984; Schultz, 1971). According to this theory, higher levels of education lead to higher levels of productivity and, consequently, higher levels of earnings (Keeley, 2009; Mincer, 1984; Urzúa, 2012). Contrary to the social reproduction theory, the human capital theory pays less attention to the role that social forces and institutions play in structuring opportunities for individuals; rather, it poses that career outcomes are determined by individual talent and decision-making regarding investment in education (Becker, 1967).

According to the human capital theory, faculty who graduated from prestigious institutions signal to employers the quality of education received, which in turn implies a certain level of individual knowledge, skills, and productivity (Monks, 2000). From this perspective, potential earnings disparities among faculty within the same disciplinary field can be explained by different levels of individual productivity and working conditions, rather than by individuals' social class of origin or other sociodemographic characteristics. As such, according to the human capital theory, doctorate holders who completed their PhD in the same field and at universities of equal

prestige should earn equivalent levels of salary, regardless of their social class of origin or other individual sociodemographic characteristics.

Methodology

Data Sources

We drew data from the CDH Chilean Survey carried out by the OECD, which is part of a larger effort to track the careers of doctorate holders worldwide (Auriol et al., 2013). We were granted access to these data by the Chilean Ministry of Economy (MINECON). The dataset contains information of a nationally representative sample of 2390 subjects drawn from a sampling frame of 7760 doctorate holders living in Chile in December 2011 who completed their doctoral degrees between 1962 and 2011 (MINECON, 2015). The dataset contains 439 variables related to socioeconomic background, degrees obtained, work experience, and current labor conditions.

This study also drew from publicly available data on university rankings, including ARWU, THE, and QS from their corresponding websites (ARWU, 2017; THE, 2018; QS, 2018). Each of these rankings was used as an indicator of prestige of PhD-granting universities. We also obtained publicly available information on the accreditation of Chilean universities from the website of the National Accreditation Commission (CNA Chile, n.d.), a state agency in charge of the quality assessment of higher education. The institutional accreditation is a process whereby universities demonstrate the degree to which they meet the quality standards established by the National Accreditation Commission. Universities are accredited for a minimum period of 2 years and a maximum of 7 years. The longer the period of accreditation granted, the higher the academic quality of the institution. Therefore, the period of accreditation granted was used as a proxy of the academic quality of the Chilean undergraduate university attended.

Sample

The target population for the study is doctorate holders who lived during their schooling years and completed their undergraduate studies in Chile and who worked as faculty members in Chilean universities when they answered the survey. Therefore, we obtained a sample of individuals from the survey dataset who met these characteristics. Because school type and location were used as indicators of social class, to have a comparable group of individuals we restricted the sample to those who lived in Chile through their schooling years. Thus, we excluded from the sample those who lived abroad while in school, because the type of school attended might not signal social class in other countries as it does in Chile. Additionally, to have an equivalent group in terms of undergraduate education, we limited the sample to those who completed their undergraduate education in Chile. Also, we restricted the sample to those who completed their doctorate after 2002, mostly because the opportunity to pursue doctoral studies three or four decades ago was accessible mostly to upper-class individuals, and consequently, the group that obtained their doctorate degrees prior to 2002 is very homogeneous in terms of their indicators of social class. Conversely, the group that graduated after 2002 is much more diverse, thus producing a sample with more variance to be modeled. Moreover, there was a noticeable increase of individuals in the dataset who obtained their PhD after 2002, which is likely due to an important increase in the number of doctoral fellowships funded by the Chilean government beginning in 1997. Finally, subjects who reported working outside academia and/or abroad were excluded from the sample. These joint selection criteria produced a total representative sample of the target population of 943 subjects.

Analytical Approach

The analytical approach involved three procedures: (1) obtaining a variable representing social class using latent class analysis, (2) development of a variable of prestige of the PhD-granting

university using confirmatory factor analysis, and (3) estimation of a path analysis model to examine the causal structure of effects of social class on educational outcomes and faculty income. To conduct these analyses, we used Mplus 8.0 with a maximum likelihood and robust standard errors estimator (MLR).

Latent Class analysis (LCA)

First, to classify individuals in the sample into social class groups, we assumed that social class is an unobserved characteristic of individuals that is manifested in the type of school they attended and the level of education of their parents. We conducted a latent class analysis, which is an inferential statistical tool that allows classifying people into homogeneous groups according to a set of measures that usually correspond to categorically observed characteristics of individuals in the sample (Wang and Wang, 2012; Masyn, 2013). The estimation of the latent class model yielded a categorical variable indicating the social class to which each subject in the sample was assigned. We merged this variable into our dataset and later used it as a predictor in the path analysis. The technical details of how this analysis was conducted are further explained in the Appendix.

Confirmatory Factor Analysis (CFA)

Secondly, with the purpose of obtaining a reliable measure of prestige of the PhD-granting university, we estimated a CFA model. We relied on rank scores from ARWU, THE, and QS as observed indicators of the latent construct of prestige. As such, we supposed that ranking scores are tangible manifestations of the same unobserved or latent construct of prestige. Once we estimated the CFA model, we obtained a continuous variable of prestige scores for all subjects in the sample to be used later as a predictor variable in the path analysis. The model was specified in such a way that corresponded to a just-identified model, and consequently, it fits the data perfectly.

Therefore, to judge the reliability of the scores obtained for the prestige factor, we relied on the sign, magnitude, and significance of the relationships between the indicators and the factor.

Path Analysis

Because a path analysis estimates direct causal effects between two variables as well as indirect causal effects transmitted via a third variable located between them in a causal structure (Loehlin, 2004), this method is particularly useful to empirically test the hypothesized cumulative effect of social class on income. As such, using a path analysis approach allowed us to not only test the direct effects of faculty's social class on their income, but also the indirect effects of social class that were transmitted to income through the variables of quality and prestige of universities attended, which are also dependent on the social class of origin. Another advantage of the path analysis approach is that it simultaneously estimates all direct and indirect effects in the causal structure. Therefore, each causal effect in the model is estimated while controlling at the same time for the causal effects among other variables in the model.

Conceptual Model

Our hypothesized model of relationships among variables is portrayed in Fig. 1. We assumed a causal structure in which social class of origin determines the quality of the university where individuals completed their undergraduate studies; in turn, the quality of the undergraduate university attended conditioned the ability of graduates to access universities of a certain prestige to pursue their doctoral studies. The last effect in the causal structure is given by the prestige of the university from which individuals earned their doctorate degrees, which we presumed defined the range of opportunities of PhD holders to secure a high-paying faculty position. We also hypothesized that, in addition to the indirect effects of social class that traveled through the causal structure to income, there was also a direct effect of social class on income. We also considered in

the model control variables that are known to influence faculty income, such as gender, discipline of study, number of years after the PhD degree was obtained, and whether or not the PhD degree was granted by a Chilean university. This latter variable is expected to be negatively associated with faculty income. The model also included factors that account for faculty working conditions, such as having a permanent contract, time spent in teaching and percentage of salary that comes from the primary employment.

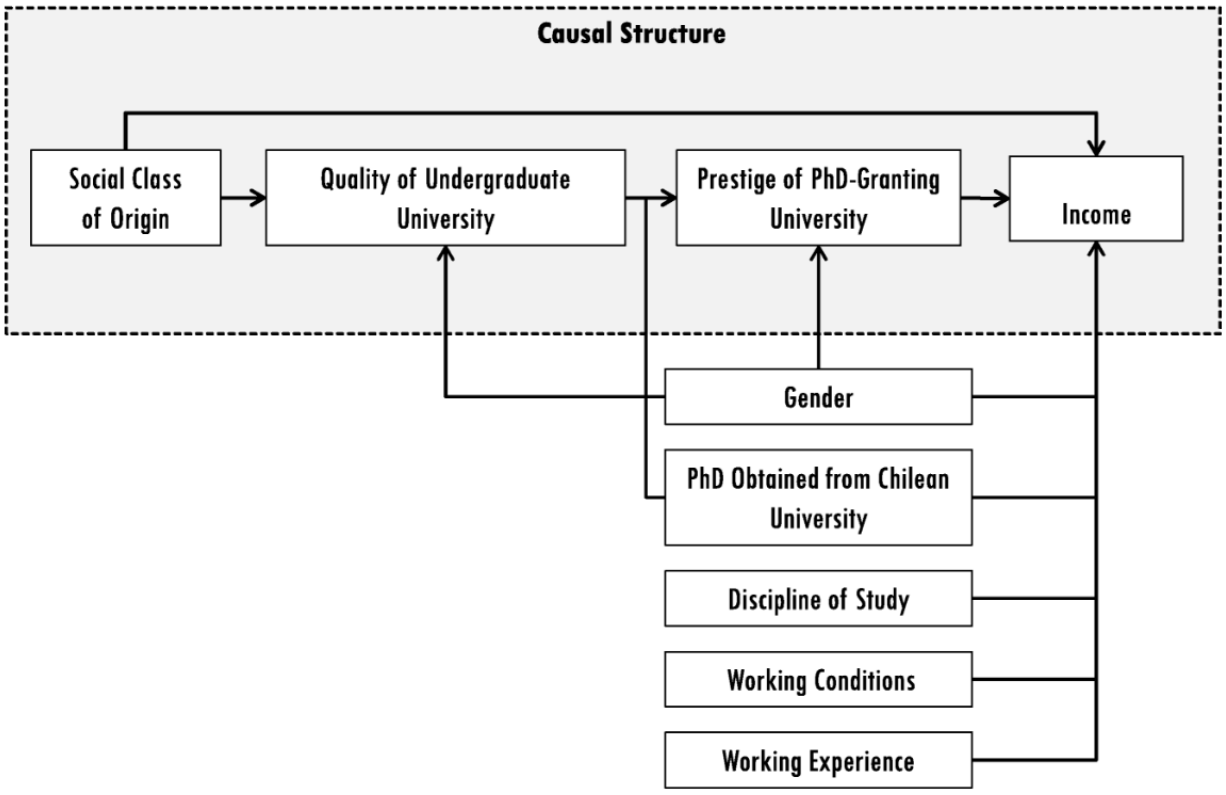

Figure 1: *Path diagram of hypothesized relationships among main variables in the model*

Variables

Income

This variable corresponds to self-reported total gross income earned during 2011, with a scale of seven brackets of unequal intervals that range from less than USD$13,919 to more than USD$159,077. In the model, income was introduced in a scale that ranges from 1 to 7. For informative purposes, the values presented in the table 1 were readjusted according to the Chilean Index Price of Consumption (IPC) of 20.7%, which corresponds to the period from December 2011 to December 2017 and a currency exchange of USD$1 = CLP$607.

Accreditation period of undergraduate university

This variable was introduced in the model as a discrete ordinal variable measured as the number of years of accreditation granted, ranging from 0 to 7 years (mean = 6.2, SD = 1.2).

Prestige of PhD-granting university

This variable was included in the model as factor scores (mean = − 0.2, SD = 17.3) that were obtained through a CFA in which prestige was defined as a latent factor measured by three observed ranking indicators (ARWU, THE, and QS).

Social class of origin

This variable was obtained through an LCA based on mother's education, father's education, type of high school attended, and high school location. Out of the 16 regions in Chile, Santiago's Metropolitan area concentrates more than 50% of the Gross Domestic Product of Chile and more than half of private high schools in the country. Each of the obtained social class categories was included in the model as binary-coded dummy variables (Yes = 1, No = 0), with the highest social class as the reference group.

Gender

Used as a control variable, this variable was included as a binary-coded dummy, with male subjects as the reference group (female = 1, male = 0).

PhD obtained from a Chilean university

This variable was included as a binary-coded dummy variable, with foreign university as the reference group (Yes = 1, No = 0).

Discipline of study

This was a nominal variable indicating six disciplines: (1) agriculture, (2) medicine and health, (3) natural sciences, (4) social sciences, (5) humanities, and (6) engineering and technology. This variable was included as binary dummy-coded indicators (Yes = 1, No = 0), with social sciences as the reference group.

Years since PhD was earned

This variable corresponds to the reported number of years between when the PhD was earned and when individuals were hired as faculty (mean = 9.1, SD = 8.0).

Working conditions

These were informed by (1) a binary indicator denoting whether the main job reported was permanent (Yes = 1, No = 0); (2) the percentage of time devoted to teaching, included as an ordinal variable with five brackets of equal intervals (0%; 1–25%; 26–50%; 51–75%; 76–100%); and (3) the percentage of income coming from the main job (mean = 87.5, SD = 16.3). A summary of descriptive statistics of the variables included in the model are displayed in Table 1.

Table 1. Summary of Descriptive Statistics

Variable		N	Percent	Cumulative Percent
Income				
	Less than $13,919	89	9.4	9.4
	$13,919 – $23,862	85	9.0	18.5
	$23,863 – $39,770	315	33.4	51.9
	$39,771 – $69,596	280	29.7	81.5
	$69,597 – $119,308	115	12.2	93.7
	$119,309 – $159,077	39	4.1	97.9
	More than $159,077	20	2.1	100
Gender				
	Female	295	31.3	31.3
	Male	648	68.7	100
Mother's education				
	Primary school	160	17.0	17.0
	Secondary school	333	35.3	52.3
	Postsecondary	404	42.8	95.1
	Graduate degree	45	4.8	99.9
	Missing value	1	0.1	100
Father's education				
	Primary school	117	12.4	12.4
	Secondary school	259	27.5	39.9
	Postsecondary	466	49.4	89.3
	Graduate degree	94	10.0	99.3
	Missing values	7	0.7	100
High School Type				
	Public	316	33.5	33.5
	Subsidized	218	23.1	56.6
	Private	407	43.2	99.8
	Missing values	2	0.2	100.0
High School Location				
	Regions	515	54.6	54.6
	Santiago Metropolitan Area	428	45.4	100
Accreditation Period Undergraduate University				
	0-2 years	11	1.2	1.2
	3-4 years	56	5.9	7.1
	5-6 years	342	36.3	43.4
	7 years	534	56.6	100
Discipline of Study				
	Agriculture	70	7.4	7.4
	Medicine & Health	76	8.1	15.5
	Natural Sciences	257	27.3	42.7
	Social Sciences	266	28.2	70.9
	Humanities	113	12.0	82.9
	Engineering & Technology	161	17.1	100
Rankings of PhD-granting Institution		**N**	**Mean**	**SD**
	THE Ranking	842	38.4	19.1
	QS Ranking	692	42.2	22.1
	ARWU Ranking	728	16.6	13.2

Limitations

The major limitations of the study concern the information available in the dataset. First, survey data is self-reported, which may involve a certain degree of measurement error that could lead to biased estimates of parameters in the model. However, the survey items used in the present study correspond to factual questions about participants themselves, which are typically more reliably measured than those seeking subjective information or information regarding other individuals (Alwin, 2007). More specifically, regarding the self-report measures of income, research on the reliability of survey data suggest that "response bias estimates of salary income are generally small" (Moore and Welniak, 2000, p. 356) and that surveys tend to produce highly reliable measures of income, registering reliabilities in the range of 0.9 (Alwin, 2007; Alwin et al., 2014). The literature also suggests that individuals with higher levels of education produce smaller amounts of response error (Alwin, 2007). Because the respondents to the survey hold doctorate degrees, which is the highest possible level of education, their response error is likely small. Overall, the findings of these studies provide confidence in using self-reported measures of factual data here.

Another limitation of the data is that it did not include information regarding individual productivity (e.g. number of peer-reviewed articles) nor the level of prestige of the universities where doctorate holders are currently employed as faculty. It is well known that individual productivity as well as characteristics of the employer are important factors to explain levels of faculty income (e.g., Nettles et al., 2000; Perna, 2001; Toutkoushian et al., 2007). Also absent from the data was the type of occupation of the parents, which is an important indicator of social class of origin. Although this variable would have brought additional information to the latent class analysis, we used parental education, which is typically correlated with the occupation of the

parents. Likewise, this data set did not have information concerning the academic ability of faculty, such as scores in college admission test, which limits the possibility of analyzing whether the effect of social class of origin can be isolated from the academic performance of applicants.

A final limitation relates to the use of rankings as measures of institutional prestige. Because world university rankings heavily rely on research productivity to rank institutions (e.g., publications and citations), they are imperfect measures of the prestige of universities (Pusser and Marginson, 2013). However, we rely on these metrics for this study because the Chilean government used two of these rankings as selection criteria to grant government-sponsored fellowships for graduate studies abroad until 2016 (CONICYT, n.d.-b).

Results

Latent Class Analysis

The results of this analysis showed that there are four distinct social classes within the sample: low, middle–low, middle–upper, and upper classes. These classes were estimated with a high degree of precision (see Appendix for further details). Based on the estimated conditional probabilities for each social class (Table 6 in the Appendix), these can be described as follows:

Latent class 1 (N = 362, 38.4%), upper class

The probability that the parents of individuals in this class had at least a bachelor's degree is higher than 60% for both parents. There were 30 and 10% chances that members assigned to this group had fathers and/or mothers with graduate degrees, respectively. The subjects assigned to this group studied in a private high school with a probability of almost 80%. There was almost a 60% chance that this group attended schools outside Santiago's metropolitan area.

Latent class 2 (N = 161, 17.1%), middle–upper class

Individuals from this group came from families where both parents likely attended higher education institutions, with a 50% probability of having completed a 2-year degree and 30% probability of having obtained a bachelor's degree. There is a 60% chance that this group studied in a school located in Santiago's metropolitan area.

Latent class 3 (N = 280, 29.7%), middle–low class

With a high degree of certainty, the mothers of individuals in this group finished high school, and the fathers either completed only high school with an almost 60% probability and there was a 30% probability that they obtained a higher education degree. There is a 50% probability that subjects in this group attended publicly funded schools, and 60% probability they attended schools located in Santiago's metropolitan area.

Latent class 4 (N = 140, 14.8%), low class

There is a high degree of certainty that mothers of subjects in this group completed only primary school, while there is 60% of probability that fathers finished primary school and 40% probability that they may have completed high school. Subjects most likely studied in public schools in Santiago's metropolitan area.

The obtained social classes relate as expected to other variables in the dataset, as evidenced by the bivariate relationships displayed in Table 2. As anticipated, doctorate holders classified in the low social class were a relatively small minority in the sample (14.8%). Also, a smaller proportion of individuals from this class made it to undergraduate universities with 7-year accreditation periods (45%) as compared to the overall sample, with a gap of almost 12 percentage points. More than two thirds of the faculty from the low social class of origin group (70%) were concentrated in the three lowest income brackets in their current job, and on average, this group earned their doctorate degrees from universities of lower than average prestige.

Table 2. Descriptive statistics of Variables of Interest by Social Class

Variables		Low (N=140)		Middle-Low (N=280)		Middle-Upper (N=161)		Upper (N=362)		Total (N=943)	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Gender											
	Female	41	29.3	60	21.4	56	34.8	138	38.1	295	31.3
	Male	99	70.7	220	78.6	105	65.2	224	61.9	648	68.7
	Total	*140*	*100*	*280*	*100*	*161*	*100*	*362*	*100*	*943*	*100*
Accreditation Period Undergraduate University											
	0-2 years	1	0.7	3	1.1	1	0.6	6	1.7	11	1.2
	3-4 years	8	5.7	24	8.6	12	7.5	12	3.3	56	5.9
	5-6 years	68	48.6	105	37.5	72	44.7	97	26.8	342	36.3
	7 years	63	45.0	148	52.9	76	47.2	247	68.2	534	56.6
	Total	*140*	*100*	*280*	*100*	*161*	*100*	*362*	*100*	*943*	*100*
Income											
	Less than $13,919	22	15.7	25	8.9	15	9.3	27	7.5	89	9.4
	$13,919 – $23,862	18	12.9	26	9.3	18	11.2	23	6.4	85	9.0
	$23,863 – $39,770	58	41.4	87	31.1	51	31.7	119	32.9	315	33.4
	$39,771 – $69,596	29	20.7	88	31.4	54	33.5	109	30.1	280	29.7
	$69,597 – $119,308	8	5.7	40	14.3	17	10.6	50	13.8	115	12.2
	$119,309 – $159,077	3	2.1	8	2.9	4	2.5	24	6.6	39	4.1
	More than $159,077	2	1.4	6	2.1	2	1.2	10	2.8	20	2.1
	Total	*140*	*100*	*280*	*100*	*161*	*100*	*362*	*100*	*943*	*100*
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Rankings PhD-Granting University											
	THE Ranking	44.4	8.7	51.6	13.9	52.9	17.1	56.8	18.4	53.7	16.7
	ARWU Ranking	14.2	5.1	16.7	9.9	18.3	12.2	22.2	17.6	19.1	14.1
	QS Ranking	39.6	15.7	44.8	17.5	45.0	19.8	51.6	20.0	47.1	19.2

Conversely, individuals classified in the upper class were the largest social class group in the sample (38.4%). Almost 70% of these subjects studied at undergraduate universities with 7-year accreditation periods, which was 12 percentage points higher than the overall sample average. Faculty from upper class origins were overrepresented in the three highest faculty income brackets. On average, this group of faculties completed their doctorate degree at universities with higher than average prestige. Interestingly, within the upper social class group, women are overrepresented, including almost half of women in the sample.

The middle–low social class is the second largest group, with 30% of the sample assigned to this social class. Contrary to the other three social class groups, men represent 79% of this group, a proportion 10 percentage points higher than that of the overall sample. Although more than half of individuals assigned to this class completed their undergraduate degree at universities with 7-year accreditation periods (52.9%), this proportion is still lower than the overall sample average. Thus, the middle–low social class is slightly underrepresented in terms of undergraduate education at this type of university. Almost half of the doctorate holders from the middle–low social class group (49.3%) are distributed across the three lowest current income brackets. This group completed their doctorate degree at universities of average prestige within the sample.

Doctorate holders assigned to the middle–upper class represented just 17% of the total sample. Almost half of the middle–upper class members (47.2%) completed their undergraduate studies at universities with 7-year accreditation periods, a percentage that was almost 10 percentage points lower than the average of the overall sample. With respect to current income, similar to the middle–low social class group, approximately half of the faculty in this social class (52.2%) are distributed across the three lowest income brackets. Actually, there is no statistically significant difference regarding the distribution of income between the middle–low and the

middle–upper classes. Also, just like the middle–low class, the middle–upper class completed their doctorate degrees at universities of average prestige, with no statistically significant differences between the two groups in this respect.

Confirmatory Factor Analysis

The CFA had the objective to obtain a variable of prestige of the PhD-granting institution based on three world university ranking systems—ARWU, THE, and QS. The results of this analysis show that the three rankings can be considered reliable indicators of the prestige factor. Factor loading estimates were all positive, statistically significant (p value < 0.001), and higher than 0.7 (ARWU $= 0.915$; THE $= 0.945$; QS $= 0.791$). This means that the three ranking indicators were positively and strongly associated with the prestige factor. Also, the high values of the R^2 (ARWU $= 0.836$; THE $= 0.892$; QS $= 0.625$) imply that the prestige factor explains most of the variance in the indicators. As a result of this analysis, a variable of prestige of PhD institution with factor scores for each individual in the sample was obtained and merged with the other variables in the dataset.

To ascertain the degree to which the obtained prestige variable behaved as hypothesized, we obtained box-and-whisker plots, displayed in Fig. 2, and compared the distribution of prestige of the PhD-granting university across social classes and income brackets. Both plots suggest a high degree of association in the expected direction between prestige and social class origin as well as between prestige and faculty income.

As anticipated, the range of variation of prestige within social class groups (panel (a) in Fig. 2) is much smaller for the low social class group, suggesting that these individuals earned their PhD from universities within a narrow range of low levels of prestige. Also, the maximum value of prestige (indicated by the top of the whiskers) was much lower for the low social class-

origin faculty as compared with the other three groups. Not surprisingly, the median (represented by the line across the boxes) was also lowest for the low social class and highest for the upper class. The position of the median within the box of the upper social class group revealed that the distribution of prestige within this group is positively skewed, with the top half of the distribution spread across universities within a wider range of prestige than the bottom half.

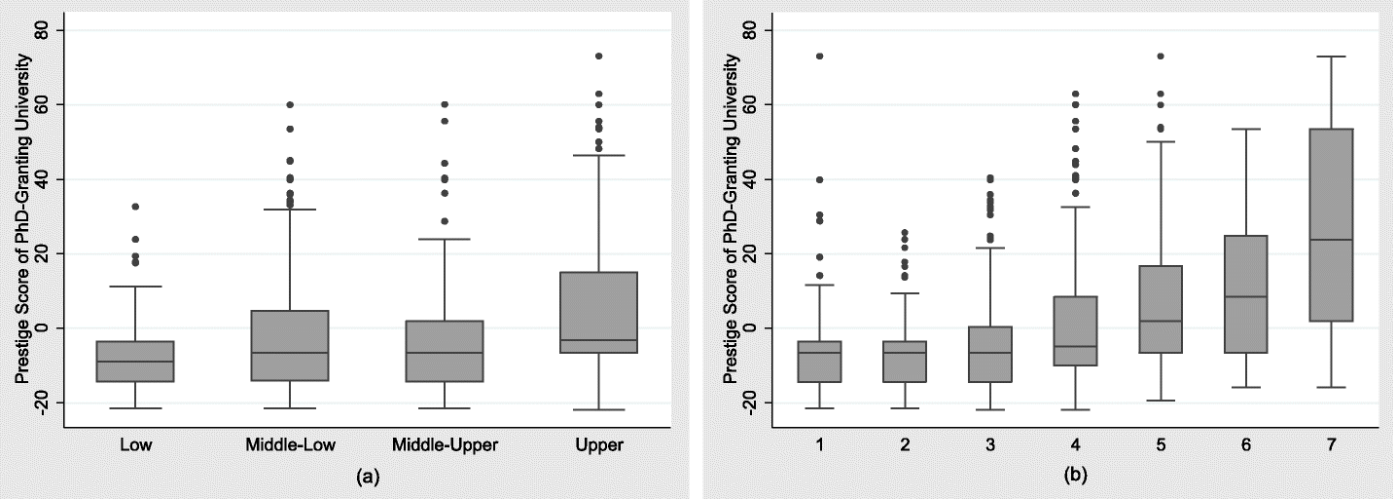

Figure 2: Box-and-whisker plots of prestige across a social classes and b income brackets

In regard to the level of prestige across income brackets (panel (b) in Fig. 2), as anticipated, a higher prestige of the PhD-granting institution attended is positively associated with faculty income. The range of variation, the median, and the maximum value of prestige of PhD-granting university all increased among faculty in higher income brackets. The distribution of prestige scores across income brackets 1 and 2 was negatively skewed, which means that a high proportion of individuals within these income brackets was scattered across lower prestige institutions, while just a small proportion of them was distributed across universities with prestige scores higher than the median. Conversely, income brackets 4 to 7 display a certain degree of positive skewness, which means that in these income brackets the bottom half of the distribution was concentrated

within a narrow range of lower prestige universities, while the top half of the distribution was scattered across a wider range of higher-prestige universities.

Path Analysis

After having classified individuals into social classes and obtained scores of the prestige of the universities from which they obtained their doctorate degrees, we proceeded to estimate a path model of causal relationships among variables. The estimated model fits the data appropriately, as indicated by the fit indices ($CFI = 0.96$, $SRMR = 0.027$, $RMSEA = 0.043$). The completely standardized estimated parameters for the path model are presented in Table 3.

Table 3. Estimated coefficients, standard errors, and two-tailed p-values for the path model (1/2)

Variables		Estimate	S.E.	P-Value
Effects on Income				
	Female	-0.187	0.030	<0.001
	Prestige PhD-Granting University	0.353	0.061	<0.001
	Low Social Class	-0.075	0.035	0.030
	Mid-Low Social Class	-0.010	0.034	0.764
	Mid-High Social Class	-0.019	0.032	0.550
	Agriculture	-0.073	0.030	0.014
	Medicine & Health	-0.027	0.030	0.374
	Natural Sciences	-0.177	0.038	<0.001
	Humanities	-0.145	0.031	<0.001
	Engineering & Technology	0.004	0.033	0.911
	Years since got doctorate degree	0.197	0.028	<0.001
	Has a permanent main job	0.154	0.028	<0.001
	Percent of time devoted to teaching	-0.123	0.027	<0.001
	Percent of income from main job	-0.132	0.028	<0.001

Table 3. Estimated coefficients, standard errors, and two-tailed p-values for the path model (2/2)

Variables		Estimate	S.E.	P-Value
Effects on Prestige of PhD-granting University				
	Low Class	-0.192	0.030	<0.001
	Mid-Low Social Class	-0.152	0.031	<0.001
	Mid-High Social Class	-0.127	0.030	<0.001
	Doctorate Degree from a Chilean University	-0.500	0.024	<0.001
	Accreditation Period Undergraduate University	0.154	0.028	<0.001
	Female	-0.058	0.028	0.037
Effects on Quality of Undergraduate University				
	Low Class	-0.097	0.035	0.006
	Mid-Low Social Class	-0.104	0.036	0.004
	Mid-High Social Class	-0.078	0.035	0.026
	Female	0.053	0.033	0.106
R-Square of Endogenous Variables				
	Income	0.279	0.029	<0.001
	Prestige PhD-Granting University	0.348	0.026	<0.001
	Accreditation Period Undergraduate University	0.017	0.008	0.040

The results are also displayed in Fig. 3 to highlight the succession of direct causal effects among variables of interest. Only significant effects are represented by arrows in the model. The first effect in the causal structure is given by social class of origin on the accreditation period of the undergraduate university attended. Upper-class individuals completed their undergraduate degree at Chilean universities whose accreditation period was 0.078, 0.104, and 0.097 SD longer than their peers from middle–upper, middle–low, and low social classes, respectively. Because we used the accreditation period of Chilean undergraduate universities as a proxy of institutional

quality, this means that the upper-class faculty in the sample studied at undergraduate institutions of higher quality as compared with their lower-class counterparts.

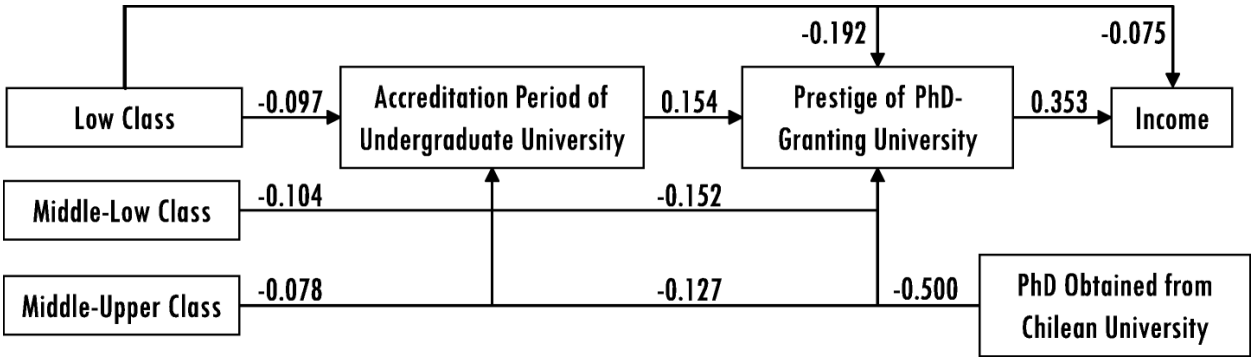

Figure 3: Standardized estimates of parameters for the path analysis model

The accreditation period (quality) of the undergraduate university was positively associated with the prestige of the PhD-granting university attended; individuals who attended an undergraduate institution with an accreditation period 1 SD higher than average were able to complete a PhD degree at universities of 0.154 SD higher prestige. We also found that the prestige of the PhD-granting university depended to a large extent on whether the PhD-granting university was located in Chile or abroad. On average, Chilean universities had 0.5 SD lower prestige as compared with that of foreign universities in the sample. Another important factor associated with the prestige of the PhD-granting institution attended was the social class of origin of individuals. Faculty from the middle–upper, middle–low, and low social classes attended PhD-granting universities with 0.127 SD, 0.152 SD, and 0.192 SD lower prestige, respectively, as compared with their peers from the upper social class.

As for the direct effects on income, the variable in the causal structure with the largest effect, as expected, was the prestige of the PhD-granting university. Per each additional SD increase in prestige of PhD-granting institution, faculty income increased by 0.353 SD. As expected, there was also a direct effect of social class of origin on faculty income, although this

effect is significant only for the low class. Faculty from the low social class of origin group earned 0.075 SD less than faculty from the upper social class, all else held constant. Gender also had a direct effect on income; on average, female faculty earned 0.187 SD less than their male counterparts. The discipline of PhD study also made a difference on income. Faculty who studied their doctorate degrees in agriculture, natural sciences, and humanities received 0.073 SD, 0.177 SD, and 0.145 SD less income than their peers in social sciences. Conversely, the income of faculty in medicine and health as well as in engineering and technology was not different than that of the reference group (social sciences) at a statistically significant level.

Finally, Table 4 shows the decomposition of the total effects of social class on income into direct and indirect negative effects. As explained earlier, indirect effects are given by the antecedent effects of social class on income that are transmitted by the variables of accreditation period of the undergraduate university (the proxy for quality) and prestige of the PhD-granting university, which are located between social class origin and income in the causal structure.

Table 4. Decomposition of effects of social class on income in direct and indirect effects

Social Class		Estimate	SE	p-value
Low Class				
	Direct	-0.075	0.035	0.030
	Indirect	-0.073	0.017	<0.001
	Total	-0.148	0.030	<0.001
Middle-Low Class				
	Direct	-0.010	0.034	0.764
	Indirect	-0.059	0.015	<0.001
	Total	-0.069	0.031	0.027
Middle-Upper Class				
	Direct	-0.019	0.032	0.550
	Indirect	-0.049	0.014	<0.001
	Total	-0.068	0.030	0.025

In addition to the direct effect of coming from the low social class already reported (− 0.075 SD), there was an indirect effect of –0.073 SD associated with individuals from the low social class having attended undergraduate and PhD-granting universities of lower quality and prestige, which added up to a total effect of 0.148 SD less income than faculty from the upper class. Likewise, although being in the middle–low and middle–upper social classes does not have statistically significant direct effects on faculty income, these membership in these social classes did influence income indirectly with negative effects of 0.059 SD and 0.049 SD, respectively, which add up to a total effect of almost 0.7 SD less income for both middle class groups as compared with peers from the upper class.

Discussion

This study aimed to decompose the effect of social class of origin on faculty income as mediated by the quality and prestige of universities attended. We decomposed the effects of social class on income into direct and indirect effects. We argue that direct effects are likely tied to recruiting and hiring practices that rely on academic networks to which access is determined by social class. On the other hand, indirect effects speak to the cumulative educational advantages associated with social class of origin.

Direct Effects

First, we found a direct effect of social class on income, with faculty from the upper social class earning more than their peers from the low social class, holding other factors constant. This implies that when comparing the income of faculty who studied at universities of equivalent quality and prestige but who belong to different social classes of origin, faculty from the low social class earn less than their upper-class colleagues, controlling for the effects of gender, discipline, experience, and working conditions. Although this effect relative to the upper class was not significant for the

two middle class groups, it calls into question the assumptions of the human capital theory, which posit that individuals with equivalent academic credentials and experience should be rewarded in the same way by the labor market (Becker, 1967; Mincer 1984). At the same time, this finding suggests that academia might not be free of the pervasive classism embedded in Chilean society (PNUD 2017).

Formal and standardized practices to hire and reward faculty are still relatively new within Chilean universities (Bernasconi, 2010; Berríos, 2014a, b). As such, by relying on more informal processes to hire faculty that likely involve recruiting within their academic network of contacts, some universities may be overlooking to some extent a pool of applicants from lower social classes who do not belong to those networks. This argument is consistent with a study by Celis and Kim (2018), who found that the engineering academic departments within research-intensive Chilean universities have disproportionally hired their own undergraduate alumni. Their findings suggest that those who entered selective Chilean research-intensive undergraduate universities and then went to foreign universities to pursue doctoral studies were able to secure a faculty position within a selective university in Chile where they already had a network of contacts. This is consistent with a vast amount of literature (Burris, 2004; Caplow and McGee, 1958; Clauset et al., 2015; Hadani et al., 2012; Headworth and Freese, 2015) that demonstrates that pursuing graduate studies at elite and prestigious universities admits prospective faculty into an exclusive academic networks, which provides them with the social capital and informational resources to secure jobs within the same network, thus producing and reproducing an elite and closed circle of scholars that is difficult to permeate for those who don't have access to the institutions where these ties are built.

Further, social class of origin also affected the level of prestige of the PhD-granting universities attended, as measured by global university rankings, with upper-class-origin faculty

overrepresented at top-ranked research-intensive universities located in English-speaking countries (Pusser and Marginson, 2013). This overrepresentation of upper-class faculty within highly prestigious universities is probably due to the advantages given by their higher levels of cultural and social capital, which translated into more opportunities to become proficient in English and a better understanding of the application process to such universities than their less privileged counterparts (Chiappa and Muñoz García, 2015).

Indirect Effects

Our results confirmed that social class of origin had an indirect effect on faculty income by determining their opportunities to attend high-quality undergraduate and prestigious PhD-granting universities. Even though the social class of origin did not have a significant direct effect on income for the middle-class groups as compared with their upper-class counterparts, the indirect effects showed that social class of origin still influenced the income of faculty from middle–low and middle–upper social classes through the quality and prestige of the universities they attended. For faculty from the low social class of origin, because both direct and indirect effects on their income were significant, this group had the largest income gap with their peers from the upper class, as compared with their peers in the middle-class groups, holding everything else constant.

In line with other studies (Clauset et al., 2015; Jungbauer-Gans and Gross, 2013; Kniffin, 2007; Monks, 2000; Ostrove et al., 2011), our findings revealed that faculty from an upper-class origin started their educational path at undergraduate universities of higher quality, obtained their doctorate degrees from universities of higher prestige, and consequently, obtained relatively high-paying faculty jobs. Conversely, this chain of effects worked in reverse for faculty from the low social class, which resulted in lower levels of earned income as compared with faculty from more privileged origins. These successions of cumulative advantages and disadvantages triggered

initially by social class of origin is consistent with the theory of social reproduction to explain our findings (Bourdieu and Passeron, 1977; Dannefer, 2003).

Social reproduction manifests itself in early access to economic, social, and cultural capitals that shape educational opportunities and then occupational status and income (Bourdieu and Passeron, 1977; Bourdieu, 1987, 1988; Dannefer, 2003). As such, faculty from the upper class, who, according to our latent classification, had largely parents with college degrees and the financial resources to afford private schools, tended to have access to higher-quality undergraduate universities (Orellana, 2011; Perez Mejias, 2012). Further, private high school attendance is positively associated with the ability of acquiring English as a second language (Matear, 2008). As stated earlier, this particular advantage might have contributed to facilitating faculty from the upper class to enter high-ranked foreign PhD-granting universities located in English-speaking countries. On the other hand, low-class faculty had parents who, at most, completed secondary education and attended public and subsidized high schools. Having attended publicly funded schools was negatively associated with the chances of entering research-intensive undergraduate universities of high academic quality in Chile (Orellana, 2011; Perez Mejias, 2012), which in turn, limited opportunities for access to highly prestigious PhD-granting universities.

Although our findings are mostly in line with the theory of social reproduction, human capital theory cannot be completely disregarded as an explanation of our findings. We found that, regardless of their social class of origin, most faculty in our sample achieved a level of income that position them at an advantaged socioeconomic status relative to much of the Chilean workforce. Indeed, in our sample, more than 80% of faculty are positioned within the highest income decile of the Chilean population. Probably, most faculty in our sample would not have achieved their

current occupational and economic status without having invested in their education, even though their social class of origin caused disproportionate income gains as a result of that investment.

Moreover, the fact that the prestige of the PhD-granting university had a direct positive effect on faculty income could mean that having graduated from a more prestigious university is seen as a signal of individual productivity and thus leads to higher earnings (Monks, 2000). This interpretation is in line with the theory of human capital (Becker, 1967; Mincer 1984; Schultz 1971), especially taking into consideration that the measures of prestige used in this study relied heavily on research outcomes of universities (Pusser and Marginson, 2013). Indeed, it is possible that having attended highly prestigious universities might be associated with access to a more resourceful research environment, which then enabled faculty to become more productive, and consequently, led them into higher levels of income as compared with their colleagues who attended less prestigious and under-resourced PhD-granting universities. However, considering that social class of origin affected the levels of prestige of the PhD-granting university attended, the positive effect of the latter on earnings cannot be analyzed independently from its relationship with social class of origin. Our methodology, unlike classic regression models, allowed us to take into account the antecedent relationships between quality and prestige of universities attended and social class of origin. These indirect effects indicated that, although attending highly prestigious universities could partly offset the negative effects on earnings of coming from a lower social class, the chances of individuals from a low social class attending highly prestigious universities are relatively low in the first place.

Implications

Although the scope of this research concerns the Chilean case only, our findings may be informative for other countries that display education systems highly stratified by social class and

high levels of income inequality. Chile and other emergent economies have relied on human capital policies and invested considerable public resources to expand the population of doctoral graduates in order to foster economic development. The fact that social class of origin is a significant predictor of the level of prestige of the PhD-granting university attended has direct implications for the implementation of government-sponsored international fellowship programs for graduate studies, which are common publicly funded strategies to increase the number of doctorate holders in these emergent economies (Perna et al., 2014).

In particular, the Chilean fellowship program to pursue graduate degrees abroad required that all applicants be admitted into one of the 150 top-ranked universities within the ARWU or THE university rankings. Thus, it is likely that fellowships may be disproportionately awarded to individuals who come from the upper social class (Perez Mejias et al., 2018; Pusser and Marginson, 2013). This is mainly because most upper-class individuals are likely proficient in English and have studied at undergraduate universities where professors are actively engaged in research and connected with scholars from highly prestigious foreign universities (Celis and Kim, 2018). Given the critical role of the prestige of the PhD-granting university on income and the lower chances of low social class groups to access highly prestigious universities, Chilean educational authorities may want to consider strategies and mechanisms to actively assist prospective fellows from the lower social classes to overcome potential access barriers to highly prestigious foreign universities, thus leveling the playing field for individuals of lower social classes.

On the other hand, the fact that social class of origin is an important determinant of earnings in Chile might serve as a motivation for faculty from low class of origin to look for better opportunities abroad, where their doctoral academic credentials and experience could potentially lead to higher levels of income. Therefore, future research could focus on investigating whether

the country is in fact losing part of its stock of doctorate holders. As Eyzaguirre and colleagues (2005) pointed out, there is a risk that human capital policies in place could bring about a "brain-drain" process and prevent the country from fully capitalizing on its investment. Consequently, it would be beneficial for the country to have strategies in place to prevent a potential brain-drain process.

Also, future studies could build on the research of Celis and Kim (2018) and examine whether the process of faculty recruiting and the operational criteria for hiring faculty might be directly or indirectly favoring a profile of candidates from a particular social class of origin. An implication of our study is for Chilean universities to consider advancing toward more transparent and standardized faculty hiring practices to make visible the blind spots that may hide the effect of social class of origin on the work opportunities and salaries of faculty.

Footnotes

1. The values were readjusted according to the Chilean Index Price of Consumption (IPC) of 18.2% corresponding to the period from December 2012 to December 2017 and a currency exchange of USD$1 = CLP$607.

References

Alwin, D. (2007). *Margins of error: a study of reliability in survey measurement*. Hoboken: Wiley-Interscience.

Alwin, D., Zeiser, K., & Gensimore, D. (2014). Reliability of self-reports of financial data in surveys: results from the health and retirement study. *Sociological Methods and Research*, 43(1), 98–136. https://doi-org.offcampus.lib.washington.edu/10.1177/0049124113507908.

ARWU (2017). *Academic ranking of world class universities 2017*. Retrieved from http://www.shanghairanking.com/ARWU2017.html.

Auriol, L., Misu, M., & Freeman, R. A. (2013). *Careers of doctorate holders*. OECD Science, Technology and Industry Working Papers. https://doi-org.offcampus.lib.washington.edu/10.1787/5k43nxgs289w-en.

Barratt, W. (2011). *Social class on campus: theories and manifestations*. Sterling: Stylus Pub.

Becker, G. S. (1967). *Human capital and the personal distribution of income; an analytical approach*. Ann Arbor: Institute of Public Administration.

Bernasconi, A. (2010). La apoteosis del investigador y la institucionalización de la profesión académica en Chile. *Estudios Sobre Educación*, 19, 139–163.

Berríos, P. (2014a). *The academic life of part-time professors in Chile* (Doctoral dissertation). State University of New York, Albany, Albany. Retrieved from http://pqdtopen.proquest.com.offcampus.lib.washington.edu/doc/1648172558.html?FMT=ABS.

Berríos, P. (2014b). La Profesión Académica en Chile: Crecimiento y Profesionalización. In A. Bernasconi (Ed.), *La Educación Superior en Chile: Transformación, Desarrollo y Crisis*, (pp. 349-357). Santiago, Chile: Pontificia Universidad Católica de Chile y Ediciones UC.

Bornmann, L., & Enders, J. (2004). Social origin and gender of doctoral degree holders. *An International Journal for all Quantitative Aspects of the Science of Science, Communication in Science and Science Policy*, 61(1), 19–41. https://doi-org.offcampus.lib.washington.edu/10.1023/B:SCIE.0000037360.59788.fb.

Bourdieu, P. (1987). What makes a social class? On the theoretical and practical existence of groups. *Berkeley Journal of Sociol*ogy, 32, 1–17.

Bourdieu, P. (1988). Homo Academicus. Cambridge: Polity Press.

Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society and culture*. Beverly Hills: Sage.

Breen, R., & Johnson, J. (2005). Inequality of opportunity in comparative perspective: recent research on educational attainment and social mobility. *Annual Review of Sociology*, 31(1), 223–243. https://doi-org.offcampus.lib.washington.edu/10.1146/annurev.soc.31.041304.122232.

Burris, V. (2004). The academic caste system: prestige hierarchies in PhD exchange networks. *American Sociological Review*, 69(2), 239–264. https://doi-org.offcampus.lib.washington.edu/10.1177/000312240406900205.

Canales, A. (2016). Diferencias Socioeconómicas en la Decisión de Postular a las Universidades Chilenas: El rol de las expectativas educativas, preparación académica y decisiones educativas de los postulantes. *Revista Calidad en la Educación*, 44, 129–157. https://doi-org.offcampus.lib.washington.edu/10.4067/S0718-45652016000100006.

Caplow, T., & McGee, R. (1958). *The academic marketplace*. New York: Basic Books Inc.

Celis, S., & Kim, J. (2018). The making of homophilic networks in international research collaborations: a global perspective from Chilean and Korean engineering. *Research Policy*, 47(3), 573–582.

Chiappa, R., & Muñoz García, A. L. (2015). Equity and advanced human capital: an analysis of the doctoral formation policies in Chile. *Psicoperspectivas*, 14(3), 17–30. Retrieved January 8, 2019http://www.psicoperspectivas.cl/index.php/psicoperspectivas/article/view/621.

Clauset, A., Arbesman, S., & Larremore, D. B. (2015). Systematic inequality and hierarchy in faculty hiring networks. *Science Advances*, 1(1). https://doi-org.offcampus.lib.washington.edu/10.1126/sciadv.1400005.

CNA Chile (n.d.). *Búsqueda Avanzada de Acreditaciones*. Retrieved from https://www.cnachile.cl/Paginas/buscador-avanzado.aspx.

CNIC. (2006). *Informe Final: Consejo Nacional de Innovación para la Competitividad*. Santiago: Asesor del Presidente de la República. CNIC.

PNUD (2017). *Desiguales. Orígenes, cambios y desafíos de la brecha social en Chile*. Santiago de Chile: Programa de las Naciones Unidas para el Desarrollo. Retrieved January 08, 2019 from http://www.cl.undp.org/content/dam/chile/docs/pobreza/undp_cl_pobreza-Libro-DESIGUALES-final.pdf.

CONICYT (n.d.-a). *Becas para Estudios de Postgrado en Chile y en el Extranjero: Estadísticas* . Retrieved from https://www.conicyt.cl/becasconicyt/estadisticas/informacion-general/.

CONICYT (n.d.-b) *Becas de Doctorado en el Extranjero*. *Becas Chile 2014.* Retrieved from http://www.conicyt.cl/becasconicyt/files/2014/02/Bases-Doctorado-en-el-Extranjero-BECAS-CHILE-Convoctoria-2014.pdf.

Crane, D. (1969). Social class origin and academic success: the influence of two stratification systems on academic careers. *Sociology of Education*, 42(1), 1–17. https://doi-org.offcampus.lib.washington.edu/10.2307/2111805.

Crane, D. (1970). The academic marketplace revisited: a study of faculty mobility using the Cartter ratings. *American Journal of Sociology*, 75(6), 953–964. https://doi-org.offcampus.lib.washington.edu/10.1086/224848.

Dannefer, D. (2003). Cumulative advantage/disadvantage and the life course: cross-fertilizing age and social science theory. *Journal of Gerontology: Social Sciences*, 58b(6), S327–S337. https://doi-org.offcampus.lib.washington.edu/10.1093/geronb/58.6.S327.

Eyzaguirre, N., Marcel, M., Rodríguez, J., & Tokman, M. (2005). Hacia la Economía del Conocimiento: El camino para crecer con equidad en el largo plazo. *Estudios Públicos*, 97, 5–52.

Geiser, C. (2013). *Data analysis with Mplus*. New York: Guilford.

González, S., Brunner, J. J., & Salmi, J. (2013). Comparación internacional de remuneraciones académicas: Un estudio exploratorio. *Calidad en la Educación*, (39), 21–42. https://doi-org.offcampus.lib.washington.edu/10.4067/S0718-45652013000200002.

González-Canché, M. S. (2017). Community college scientists and salary gap: navigating socioeconomic and academic stratification in the U.S. higher education system. *The Journal of Higher Education*, 88(1), 1–32. https://doi-org.offcampus.lib.washington.edu/10.1080/00221546.2016.1243933.

Guzmán-Valenzuela, C., & Barnett, R. (2013). Academic fragilities in a marketised age: the case of Chile. *British Journal of Educational Studies*, 61(2), 203–220. https://doi-org.offcampus.lib.washington.edu/10.1080/00071005.2013.776006.

Hadani, M., Coombes, S., Das, D., & Jalajas, D. (2012). Finding a good job: academic network centrality and early occupational outcomes in management academia. *Journal of Organizational Behavior*, 33(5), 723–739. https://doi-org.offcampus.lib.washington.edu/10.1002/job.788.

Hanushek, E. (2013). Economic growth in developing countries: the role of human capital. *Economics of Education Review*, 37(2), 204–212. https://doi-org.offcampus.lib.washington.edu/10.1016/j.econedurev.2013.04.005.

Hartmann, M. (2010). Achievement or origin: social background and ascent to top management. *Talent Development and Excellence*, 2(1), 105–117.

Headworth, H., & Freese, H. (2015). Credential privilege or cumulative advantage? Prestige, productivity, and placement in the academic sociology job market. *Social Forces*, 94(3), 1257–1282. https://doi-org.offcampus.lib.washington.edu/10.1093/sf/sov102.

INE. (2017). *ESI Encuesta Suplementaria de Ingresos 2016*. Sintesis de Resultados. Retrieved from http://www.ine.cl/docs/default-source/ingresos-y-gastos/esi/ingreso-de-hogares-y-personas/resultados/2016/esi_sintesis_2016_nacional.pdf?sfvrsn=4.

Jungbauer-Gans, M., & Gross, C. (2013). Determinants of success in university careers: findings from the German academic labor market. *Zeitschrift für Soziologie,* 42(1), 74–92. https://doi-org.offcampus.lib.washington.edu/10.1515/zfsoz-2013-0106.

Keeley, B. (2009). Human capital: how what you know shapes your life. Paris: OECD.

Kniffin, K. (2007). Accessibility to the PhD and professoriate for first-generation college graduates: review and implications for students, faculty, and campus policies. *American Academic*, 3, 49–79.

Lang, D. (1984). Education, stratification, and the academic hierarchy. *Research in Higher Education,* 21(3), 329–352. https://doi-org.offcampus.lib.washington.edu/10.1007/BF00974866.

Lang, D. (1987). Equality, prestige, and controlled mobility in the academic hierarchy. *American Journal of Education,* 95(3), 441–467. https://doi-org.offcampus.lib.washington.edu/10.1086/444314.

Loehlin, J. (2004). *Latent variable models: an introduction to factor, path, and structural equation analysis* (4th ed.). Mahwah: Taylor and Francis.

Masyn, K. (2013). Latent class analysis & finite mixture modeling. In T. D. Little (Ed.), *The Oxford handbook of quantitative methods*, Vol. 2: statistical analysis (pp. 551–610). Online publication: Oxford.

Matear, A. (2008). English language learning and education policy in Chile: can English really open doors for all? *Asia Pacific Journal of Education*, 28(2), 131–147. https://doi-org.offcampus.lib.washington.edu/10.1080/02188790802036679.

McDonough, P. M. (1998). *Choosing colleges. How social class and schools structure opportunity*. Albany: SUNY Press.

McDonough, P. M., & Fann, A. J. (2007). The study of inequality. In P. J. Gumport (Ed.), *Sociology of higher education. Contributions and their contexts* (pp. 53–93). Baltimore: The Johns Hopkins University Press.

Mincer, J. (1984). Human capital and economic growth. Economics of Education Review, 3(3), 195–205. https://doi-org.offcampus.lib.washington.edu/10.1016/0272-7757(84)90032-3.

MINECON (2015). *Principales resultados proyecto CDH 2011*. Encuesta trayectoria de profesionales con grado de doctor residentes en Chile. Retrieved from

http://www.economia.gob.cl/wp-content/uploads/2015/01/Presentaci%C3%B3n-principales-resultados-CDH.pdf.

MINEDUC (2015). *Informe nacional de resultados SIMCE 2012*. Retrieved from http://archivos.agenciaeducacion.cl/biblioteca_digital_historica/resultados/2012/result_2012.pdf.

MINEDUC (2017). *Informes personal académico*. Retrieved from http://www.mifuturo.cl/wp-content/uploads/2018/SIES/informes_anuales/academicos/informe%20personal%20academico_2017_sies.pdf?x78460.

MINEDUC. (2018). *Compendio histórico de educación superior*. Retrieved from: http://www.mifuturo.cl/index.php/estudios/estructura-compendio

Mizala, A., & Torche, F. (2012). Bringing the schools back in: the stratification of educational achievement in the Chilean voucher system. *International Journal of Educational Development*, 32(1), 132–144. https://doi-org.offcampus.lib.washington.edu/10.1016/j.ijedudev.2010.09.004.

Monks, J. (2000). The returns to individual and college characteristics: evidence from the national longitudinal survey of youth. *Economics of Education Review*, 19(3), 279–289. https://doi-org.offcampus.lib.washington.edu/10.1016/S0272-7757(99)00023-0.

Moore, J. C., & Welniak, E. J. (2000). Income measurement error in surveys: a review. *Journal of Official Statistics*, 16(4), 331.

Morrison, E., Rudd, E., & Nerad, M. (2011). Onto, up, off the academic faculty ladder: the gendered effects of family on career transitions for a cohort of social science Ph.D.s. *The Review of Higher Education*, 34(4), 525–553. https://doi-org.offcampus.lib.washington.edu/10.1353/rhe.2011.0017.

Mullen, A. L., Goyette, K. A., & Soares, J. A. (2003). Who goes to graduate school? Social and academic correlates of educational continuation after college. *Sociology of Education*, 76(2), 143–169. https://doi-org.offcampus.lib.washington.edu/10.2307/3090274.

Nettles, M. T., Perna, L. W., & Bradburn, E. M. (2000). *Salary, promotion, and tenure status of minority and women faculty in U.S. 1993 national study of postsecondary faculty* (NSOPF-93). Washington, DC: NCES.

Núñez, J., & Gutiérrez, R. (2004). Classism, discrimination and meritocracy in the labor market: the case of Chile. Retrieved from http://www2.facso.uchile.cl/sociologia/1060225/docs/chile/nunez.pdf.

OECD (n.d.). *Inequality*. Retrieved from http://www.oecd.org.offcampus.lib.washington.edu/social/inequality.htm.

OECD & World Bank. (2010). *Chile's international scholarship programme*. Retrieved from https://www-oecd-ilibrary-org.offcampus.lib.washington.edu/education/chile-s-international-scholarship-programme_9789264086425-en.

Oldfield, K. (2010). Our cutting edge isn't cutting it: why public administration should be the first discipline to implement a social class-based affirmative action plan for hiring professors. *Administration & Society*, 41(8), 1016–1038.

Oldfield, K., & Conant, R. (2001). Professors, social class, and affirmative action: a pilot study. *Journal of Public Affairs Education*, 7(3), 171–185. Retrieved January 8, 2019 fromwww.jstor.org/stable/40215529.

Orellana, V. (2011). Nuevos estudiantes y tendencias emergentes en la educación superior. Una mirada al Chile del mañana. In M. Jiménez & F. Lagos (Eds.), *Nueva Geografía del Sistema de Educación Superior* (pp. 80–140). Santiago: USS.

Ostrove, J., Stewart, A., & Curtin, N. (2011). Social class and belonging: implications for graduate students' career aspirations. *Journal of Higher Education*, 82(6), 748–774. https://doi-org.offcampus.lib.washington.edu/10.1353/jhe.2011.0039.

Perez Mejias, P. (2012). *School and individual factors that contribute to the achievement gap in college admissions tests in Chile* (Doctoral Dissertation). University of Maryland, College Park, ProQuest Dissertations Publishing. 3517700.

Perez Mejias, P., Chiappa, R., & Guzmán-Valenzuela, C. (2018). Privileging the privileged: The effects of international University rankings on a Chilean fellowship program for graduate studies abroad. *Social Sciences*, 7(12), 243–264. https://doi-org.offcampus.lib.washington.edu/10.3390/socsci7120243.

Perna, L. (2001). Sex differences in faculty salaries: a cohort analysis. *The Review of Higher Education*, 24(3), 283–307. https://doi-org.offcampus.lib.washington.edu/10.1353/rhe.2001.0006.

Perna, L. (2005). Sex differences in faculty tenure and promotion: the contribution of family ties. *Research in Higher Education*, 46(3), 277–307. https://doi-org.offcampus.lib.washington.edu/10.1007/s11162-004-1641-2.

Perna, L. W., Orosz, K., Gopaul, B., Jumakulov, Z., Ashirbekov, A., & Kishkentayeva, M. (2014). Promoting human capital development: a typology of international scholarship programs in higher education. *Educational Researcher*, 43(2), 63–73. https://doi-org.offcampus.lib.washington.edu/10.3102/0013189x14521863.

Pusser, B., & Marginson, S. (2013). University rankings in critical perspective. The Journal of *Higher Education*, 84(4), 544–568. https://doi-org.offcampus.lib.washington.edu/10.1353/jhe.2013.0022.

QS (2018). QS world university rankings 2018. Retrieved from https://www.topuniversities.com/university-rankings/world-university-rankings/2018.

RICYT (n.d.) *Doctorates 2007-2016*. Retrieved from http://dev.ricyt.org/ui/v3/comparative.html?indicator=CDOCTORADO

Schultz, T. W. (1971). *Investment in human capital: the role of education and of research*. New York: Free Press.

Simburger, E., & Neary, M. (2016). Taxi professors: academic labour in Chile—a critical practical response to the politics of worker identity. *Workplace: A Journal for Academic Labour*, 28, 48–73.

THE (2018). *The Times Higher Education (THE) world university rankings 2018*. Retrieved from https://www.timeshighereducation.com/world-university-rankings/2018/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats.

The World Bank (n.d.). *LAC equity lab: poverty—poverty rate*. Retrieved from http://www.worldbank.org.offcampus.lib.washington.edu/en/topic/poverty/lac-equity-lab1/poverty/head-count.

Toutkoushian, R. K., Bellas, M. L., & Moore, J. V. (2007). The interaction effects of gender, race, and marital status on faculty salaries. *The Journal of Higher Education*, 78(5), 572–601.

Triventi, M. (2013). Stratification in higher education and its relationship with social inequality: a comparative study of 11 European countries. *European Sociological Review*, 29(3), 489–502. https://doi-org.offcampus.lib.washington.edu/10.1093/esr/jcr092.

Urzúa, S. (2012). The economic returns to higher education in Chile: revising the foundations of 30 years of public policies. *Estudios Públicos*, 125, 1–52.

Valdivieso, P., Antivilo, A., & Barrios, J. (2006). Caracterización sociodemográfica de estudiantes que rinden la PSU, postulan y se matriculan en universidades del Consejo de Rectores. *Calidad en la Educación*, 24, 319–361.

Walpole, M. (2003). Socioeconomic status and college: How SES affects college experiences and outcomes. *The Review of Higher Education*, 27(1), 45–73. https://doi-org.offcampus.lib.washington.edu/10.1353/rhe.2003.0044.

Wang, J., & Wang, X. (2012). *Structural equation modeling with Mplus: methods and applications*. Chichester: Wiley/Higher Education Press.

Webber, K. L., & González-Canché, M. G. (2015). Not equal for all: gender and race differences in salary for doctoral degree recipients. *Research in Higher Education*, 56(7), 645–672. https://doi-org.offcampus.lib.washington.edu/10.1007/s11162-015-9369-8.

Welch, A. (1997). The peripatetic professor: the internationalization of the academic profession. *Higher Education*, 34, 323–345.

Appendix A: Latent class analysis (LCA)

Model specification

The purpose of estimating an LCA model was to classify individuals in the sample into social classes using four observed indicators: mother's level of education, father's level of education, high school type, and high school location. To specify the LCA model, we followed the steps recommended by Masyn (2013) and Geiser (2013). We first used fit indices and classification diagnostics to decide on the number of classes to be retained. We relied on absolute, relative, and information-based fit indices to assess the degree to which the LCA model reproduced the observed data. We also looked at the relative entropy index and average class assignment probabilities to assess the precision and reliability of the classification. Once the model was fitted, the algorithm sorted individuals into the latent class for which they displayed the highest posterior class probability.

Class enumeration process

To determine the number of k classes, we specified a 1-class model and then fitted additional models incrementing the number of classes by one, until models were no longer identified, as recommended by Masyn (2013) and Geiser (2013). We compiled the fit indices and classification diagnostics of each competing model in Appendix Table 5 to decide on the number of classes to be retained.

Table 5. Fit indices for alternative latent class models

Model	LL	npar	Pearson Chi2			LR Chi2			AIC	BIC	aBIC	E_k	BLRT *p*-value	VLMR *p*-value
			Chi2	*df*	*p*-value	Chi2	*df*	*p*-value						
1-class	-4422.9	11	1001.7	138	<0.001	943.3	138	<0.001	8867.7	8921.1	8886.1	-	-	-
2-class	-4100.5	23	317.5	126	<0.001	300.7	126	<0.001	8246.9	8358.5	8285.4	0.76	<0.001	<0.001
3-class	-4045.5	35	169.4	114	<0.001	190.9	114	<0.001	8161.1	8330.8	8219.6	0.72	<0.001	0.002
4-class	-4017.0	47	127.7	102	**0.0434**	133.8	102	**0.190**	8128.0	**8355.9**	**8206.6**	**0.80**	<0.001	**0.016**
5-class	-4001.6	59	98.4	90	0.2561	102.9	90	0.167	8121.1	8407.2	8219.8	0.79	0.005	0.931
6-class	-3986.5	71	69.6	78	0.7398	72.9	78	0.643	8115.1	8459.4	8233.9	0.80	<0.001	1.000

Assessment of the model fit

As for absolute fit, we used Pearson and likelihood ratio chi-square tests to assess the degree to which an LCA model reproduces the observed data. Significant values associated with these tests indicate statistically significant discrepancy between the hypothesized model and the observed data. We also relied on likelihood ratio difference tests (BLRT and VLMR) to assess the relative fit of the models obtained. A significant p value for these difference tests indicates that the model with k classes fits the data better than the model with k − 1 classes. Additionally, we obtained the Akaike's information criterion (AIC), the Bayesian information criterion (BIC), and adjusted BIC (aBIC) to assess the model in relation to both fit and parsimony. Smaller values of these information indices indicate better balance between fit and parsimony among competing models.

Classification diagnostics

After checking the models' goodness of fit, we looked at the relative entropy index (Ek) and average latent class assignment probabilities to gauge the precision with which each competing model is assigning individuals to each class; the values for each competing model are displayed in Appendix Table 5. Ek summarizes the overall precision of the classification for the sample across all latent classes (Masyn, 2013). Values of Ek close to 1 indicate a high degree of classification accuracy (Geiser, 2013), while values close to 0 indicate latent classes are not sufficiently separated. As for class assignment probabilities, values larger than 0.8 in the diagonal indicate high precision or reliability of the classification (Geiser, 2013).

Results

The results of this analysis showed that there are four distinct social classes within the sample, based on the fit indices, classification diagnostics, and average class assignment probabilities. The fit indices and classification diagnostics obtained for each competing model are displayed in

Appendix Table 5. Bolded values indicate the corresponding value is the best one for each fit criterion. The absolute fit indices show that the 1-class, 2-class, and 3-class models do not fit the data well. For the LR chi-square test of fit, the 4-class model is marginally adequate, while the 5-class model displays a high degree of model-data fit. However, the BLRT and VLMR tests of differences indicate that the 5-class model is not significantly better than the 4-class model. Based on all fit indices, we concluded that the model that best fits the data is the 4-class model.

The classification diagnostics also support the choice of the 4-class model. On one hand, the entropy index Ek (see Appendix Table 5) shows that the more accurate classification is given by the 4-class model. The average class assignment probabilities of the 4-class model indicate high precision or reliability of the classification, as all probabilities in the diagonal are larger than 0.8 (LC1 = 0.87; LC2 = 0.82; LC3 = 0.96; LC4 = 0.92). Finally, the estimated conditional probabilities of class assignment are displayed in Appendix Table 6.

Table 6. Estimated latent class probabilities for each observed indicator

Variables	Latent Class 1 N=362	Latent Class 2 N=161	Latent Class 3 N=280	Latent Class 4 N=140
Mother's Level of Education				
Primary school	0.000	0.150	0.021	0.942*
High school	0.160*	0.000	0.957*	0.000
Associate's degree	0.106*	0.538*	0.000	0.019
Bachelor's degree	0.615*	0.288*	0.022	0.039
Graduate degree	0.119*	0.024	0.000	0.000
Father's Level of Education				
Primary school	0.002	0.015	0.105*	0.615*
High school	0.025	0.198*	0.584*	0.359*
Associate's degree	0.042	0.487*	0.156*	0.000
Bachelor's degree	0.661*	0.289*	0.155*	0.025
Graduate degree	0.270*	0.011	0.000	0.000
High School Type				
Public	0.101*	0.341*	0.466*	0.643*
Subsidized	0.112*	0.297*	0.309*	0.282*
Private	0.787*	0.361*	0.224*	0.075*
High School Location				
Metropolitan	0.418*	0.609*	0.569*	0.737*
Regions	0.582*	0.391*	0.431*	0.263*

*Probability is different from 0 with 95% of confidence

Limits of Academic Meritocracy in Faculty Hiring Processes in Highly Stratified Higher Education Systems: Insights From The Case Of Chile

This study is the second of three dissertation papers on the effects of social class of origin on the careers of faculty in Chile. An early version of this article was presented at the Tertulias de Educación Superior, January 07th, 2019, Santiago, Chile.
Roxana Chiappa, rchiappa@uw.edu

Abstract

It is quite common for academics to publicly allude to the notion of academic merit to justify faculty-hiring decisions. Yet, very few studies have empirically analyzed to what extent academic departments have recruitment procedures aligned with the accepted conceptions of academic merit.

Through a comparative case study, this paper analyzes how industrial engineering and economics academic departments in four Chilean universities of different levels of prestige have conducted faculty recruitment procedures and implemented hiring criteria. Findings show that academic units are seeking candidates who have a high number of publications and international networks, demonstrate disciplinary expertise aligned with the academic units' needs and show interest in working in their institutions. However, not all academic units have open recruitment procedures and formal job search committees for recruiting candidates. Likewise, all academic departments in the sample lack the means for assessing the (un)conscious biases of faculty in hiring decisions.

Lack of transparent practices of faculty recruitment and mechanisms to prevent bias call into question the meritocratic ethos of sciences exerted in processes of faculty hiring, which supposes open competition and hiring criteria that primarily reward the academic performance of candidates as compared with other attributes.

Introduction

We received 180 applications [for two positions] ... and that says it all. So, first we conducted an initial filter… of the people we thought would not be a good match … We sought out the candidates who had studied in the best universities, in the best postgraduate programs… who were research-orientated, who had the potential for being good instructors, because we also cared about the teaching aspect [...] and of course, the recommendation letters. We carefully read the recommendation letters; who wrote them and what was said and omitted in them. We looked for those with the most academic merit.

(Dean of a School of Economics at a Research-intensive University in Chile).

It is quite common for academics to publicly allude to the notion of academic merit to justify faculty-hiring decisions. However, the attributes of academic merit are socially constructed and contextualized (Nielsen, 2015). As described by Merton (1973), scientific institutions are the most meritocratic institutions of society, not because they do not reproduce society's stratification but because their reward system is founded on procedures of *collective judgment* for assessing the *intellectual contribution* of researchers, rather than their sociodemographic characteristics.

Yet, the empirical evidence of how faculty hiring processes actually occur contrasts with this ideal of meritocracy, mainly because professors entrusted with faculty hiring processes behave as gatekeepers, and their rationale and actions generate exclusion mechanisms that are not exempt from conscious or unconscious bias. For instance, in USA academia, several studies have shown that women and faculty candidates with racial minority backgrounds (Bosak and Sczesny, 2011; Ceci and Williams, 2015; Devine et al., 2017; Li and Koedel, 2017; Moss-Racusin, 2012; Webber and González-Canché, 2015; Williams and Ceci, 2015) are less likely to be hired, promoted and well-paid as compared with their white male counterparts.

Likewise, other bodies of research show that the academic labor market in highly stratified higher education systems works as a stratifying network, in which the level of prestige of the PhD-granting academic department has a significant bearing on the possibilities of being hired by other prestigious universities (for the USA, see Burris, 2004; Clauset et al., 2015; Hadani, Coombes, Das, and Jalajas, 2012; Headworth and Freese, 2016; for France, Germany, and the USA, see Musselin, 2009; for South Africa, see Cowan and Rossello, 2018). There is no agreement among academics as to whether faculty hiring committees consider the level of prestige of academic departments as an indicator of the meritocratic attributes of applicants and/or their network affiliation (Burris, 2004; Cowan and Rossello, 2018; Hadani et al., 2012; Posselt, 2018). Nonetheless, if faculty use the degree of prestige of their PhD-granting universities as a shortcut to narrowing down the list of candidates, the process of faculty hiring (un)intentionally excludes all the candidates who did not secure admission at prestigious PhD-granting universities, regardless their scientific productivity.

Furthermore, reality digresses from the ideal of meritocracy because academics on hiring committees are not only seeking outstanding researchers, but also *colleagues* who will *teach* a specific subject matter and will work with them for a prolonged period of time (Musselin, 2009). Hence, it is expected (and accepted) that faculty hiring committees will use their subjective perception to evaluate *to what extent* the profiles of faculty applicants match the institutional requirements and culture of the recruiting academic department (Bartsch and Diskson, 2015; Musselin, 2009; Landrum and Clump, 2004). Empirical studies of faculty hiring processes suggest that, because of the high degree of uncertainty in the selection process, academic labor markets work as a type of economy of quality (Karpik, 1989). This term describes markets with a high degree of uncertainty, in which the quality of candidates is measured by multiple criteria. Thus, it

is expected that faculty utilize a variety of informational sources to judge the exceptionality of candidates.

As such, the question is not whether faculty hiring processes are meritocratic or not**,** but rather to what extent academic units have institutional practices in place that reflect their commitment to the meritocratic ethos of science, i.e., to the primacy of candidates' scientific accomplishments or promise. These practices shall guarantee that faculty recruitment processes are open (Nielsen, 2015), scrutinized by collective bodies, prevent social bias mechanisms from operating, and that faculty hiring criteria, by definition, reward the intellectual and academic competencies of applicants over any other socio-demographic characteristics.

Using Chile as a national setting, this article analyzes faculty hiring processes from two standpoints. First, I describe how academic departments in economics and engineering faculties recruit and identify the "short" list of candidates who will receive an invitation to a job interview. I focus on these stages – recruitment and the list of hiring criteria – because faculty at these stages are evaluating candidates on paper and are less exposed to make assumptions about candidates' sociodemographic characteristics as compared when faculty interact face-to-face with candidates. Second, I analyze how the institutional and disciplinary characteristics of academic departments are associated with institutional hiring practices. Economics and industrial engineering were selected as disciplinary fields to examine, because academic departments in these fields appear to have a greater degree of professionalization of the academic career (Bernasconi, 2010) and offer programs in high demand of undergraduate enrollment as compared with other fields (MINEDUC, 2018). These two characteristics suppose that academic departments in economics and industrial engineering are primarily paying attention to the scientific productivity of candidates and have the need to recruit new faculty.

Why study the Chilean case?

Chile is one the several emerging economies that have adhered to the "knowledge economy" paradigm to improve their economic growth, reduce high levels of income inequality, and advance to a higher level of economic development (CNIC, 2006; Eyzaguirre et al., 2005). Knowledge economy proposes that economic and social prosperity of a nation depends on its capacity to produce, absorb and transform (scientific and technological) knowledge rather than its physical capitals. In the last decade, the Chilean government has granted more than 10,000 doctoral fellowships, which has simultaneously given rise to an exponential increase in applicants to faculty jobs in all disciplinary fields (González and Jiménez, 2014). Within the same period, the country experienced three major student movements that revealed how the high levels of income and social inequality of the Chilean society gets reproduced in its higher education system (Bellei, Cabalin, and Orellana, 2018). The richest 10% earns 25 times than the poorest 10% (OECD, 2016). These characteristics generate an interesting context for assessing to what extent the meritocratic ethos of science prevails in a highly stratified higher education system. Two questions are answered: a) To what extent do academic departments have hiring procedures that demonstrate their commitment to the meritocratic ethos of science? b) What institutional and disciplinary characteristics of academic departments relate to recruiting decisions and the definition of hiring criteria?

Policy Context: Chile's higher education system

Chile's higher education system has changed dramatically in the last six decades. At the end of the 1960's, the Chilean university sector comprised eight institutions that mostly served a minority group from upper and upper middle-class families (Brunner, 2014). Two of the universities – the University of Chile and the Technical University – were State-owned; whereas the other six

universities were owned by the Catholic Church (Catholic University in Santiago, Catholic University of the North, Catholic University of Valparaiso) and regional elites (Austral, Federico Santa Maria, and Concepcion). Regardless of who owned the university, the government subsidized university budgets through direct funding and indirect contributions, stipulated in special laws, to all universities in the system (Arriagada, 1989). It is estimated that, by 1960, public funding of tertiary education was equivalent to 0.72% of the Chilean GDP (Arriagada, 1989).

Today, Chile has a mass higher education system serving 1.17 million students and comprising 157 higher education institutions, mostly private in ownership. Public funding in tertiary education was equivalent to 2.50% of the country's GDP in 2015 (OECD, 2019), one of the smallest shares in public expenditure among OECD countries, after the United Kingdom and Japan.

Among the major reforms that caused the expansion of undergraduate enrollment were the privatizing reforms imposed in 1981 during the dictatorship of Augusto Pinochet (1973-1989). These reforms dramatically cut government funding to the existing universities and allowed the private sector to participate in the creation of universities, professional institutes (4-year degrees) and vocational colleges (2-year degrees). At the same time, these reforms transformed the regional branches of the two public universities – University of Chile and the Technical University – into independent regional universities. The role of the State in higher education changed from principal provider and funder to regulator of the system (Bernasconi and Rojas, 2003).

Today there are 43 private professional institutes and 47 private vocational colleges serving 31% and 12% of undergraduate enrollment (MINEDUC, 2018), respectively. The public and private universities created prior to 1981 and two new public universities created in the last five years are part of the Council of Presidents of Chilean Universities (CRUCH in its Spanish

acronym). These 27 universities concentrate 27% of undergraduate students, whereas 34 private universities (Non-CRUCH private), created after 1981, serve 31% of all undergraduate students.

CRUCH universities are differentiated from non-CRUCH universities by their organizational regime and access to public funding. CRUCH universities have a governing structure where tenured faculty vote to select the university authorities (president, deans, department chairs) (Rock and Rojas, 2012), whereas the decision-making process in non-CRUCH universities is largely centralized in the university's presidents. Regarding access to public funding, the State still funds a small portion of the budget of CRUCH universities (public and private) through direct funding. Students at non-CRUCH universities were only able to access government-sponsored student-aid loans once their institution passed accreditation requirements, after 2003. Faculty working at non-CRUCH private universities have not had restrictions to compete for research grants, funded by public money, at least the grant has a particular target population that excludes private universities (e.g. masters' fellowships for public servants).

The National Commission of Accreditation (CNA), a government agency, has regulated the accreditation processes since 2006. Minimal institutional accreditation criteria require universities to validate undergraduate teaching and institutional management. Universities can voluntarily certify their capacity in the areas of research, postgraduate and extension. Accreditation periods range from two to seven years, and the higher the academic quality of the university, the greater the number of areas and years of accreditation granted. Today, 43 of the 61 universities in the country are accredited based on minimum standards – for teaching and institutional management – for at least two years; 25 are accredited in the research area for three or more years, and just three universities were granted the maximum number of seven years of accreditation in all areas (CNA, n.d.). The latter institutions are all CRUCH universities, with the

highest levels of research capacity in the country, and are typically ranked as highly prestigious in local (Revista Qué Pasa, 2017; Revista América Economía, 2017) and international Latin American university rankings (QS Latin American Universities, 2018).

Chile's income inequality is reflected in its higher education system

The reproduction of income inequality at the higher education level stems from the relationship between a student's socioeconomic status, type of high school attended, and the score obtained in the national college admission test (PSU), which finally determines the possibility of accessing universities of varying academic standards (Canales, 2016; Perez Mejias, 2012) and institutional prestige (Revista Qué Pasa, 2017; Revista América Economía, 2017).

The Ministry of Education's 2017 enrollment statistics show that students from public (completely state funded) and subsidized high schools (partially funded by families) accounted for approximately 32% and 52% of undergraduate enrollment in Chile, respectively, but they were over-represented in open-access universities with low accreditation periods and vocational colleges that do not require minimum PSU test scores. On the other hand, students from private high schools (fully paid for by families) accounted for only 16% of undergraduate enrollment, albeit they were concentrated in a few highly selective, accredited universities with high research capacity (MINEDUC, 2018).

This degree of social stratification gives rise to a university system differentiated not only by its institutional characteristics and accreditation status, but also by the socioeconomic profile of its students (Orellana, 2011; Canales, 2016). There is no comprehensive data on the socio-demographic profile of faculty in Chile, but available data on the careers of doctorate holders living in Chile in 2015 suggests that the most prestigious universities tend to hire their undergraduate

alumni, which indicates that social class of origin may have an indirect effect on the possibility of being hired by the most prestigious universities (MINECON, 2015).

Faculty Hiring Processes in Chile

Studies on faculty careers in Chile is an emerging field in the Chilean higher education scholarship (Bernasconi, 2003). Some literature describes the numerous changes that the academic career has experienced in the last decades (Bernasconi, 2003, 2008, 2010; Berríos, 2008; Schiefelbein, 1996; Véliz Calderon et al, 2018). Other studies have analyzed how institutional (González, Brunner and Salmi, 2013) and sociodemographic factors (Chiappa and Perez Mejias, 2019) affect faculty income; the working conditions of part-time and contingent faculty staff in Chile (Berríos, 2014; Simburger and Neary, 2016); and the lack of representation of women in tenure track positions (Berríos, 2008). Other literature has reviewed international mobility (Muñoz García, 2014) and international research collaboration networks of Chilean academia (Celis and Kim, 2018).

Conjointly, this body of literature shows that academic careers have transitioned to an increasing degree of professionalization, in which the "academic researcher" has been *institutionalized* as the referential model among academics (Bernasconi, 2008; 2010; Brunner; 2014; Véliz-Calderon et al., 2018). As described by Clark (1987), the professional academic is a person with a high level of research training, typically acquired after having conducted a doctorate degree, who works as a full-time academic, devotes most of his or her time to research, is an expert in their discipline, and is primarily affiliated to their disciplinary field rather than to a specific institution.

In turn, the professional who teaches undergraduate courses – the predominant model of academics in Chile and Latin America for the entire 19th century until the mid-20th century – was relegated to a second place by the research professor model (Bernasconi, 2010; Brunner, 2014;

Schwartzman, 1993). Until the middle of the 20th century, the profile of academics was represented by professionals, who, motivated by the social status of the academic role, decided to teach undergraduate classes as a complementary function of their professional activity (Berríos, 2014). The University Reform movement in Latin American, that started in the Argentine University of Cordoba in 1918, achieved its peak in Chile at the end of the 1960's. This movement that sought to democratize and modernize universities in Chile also translated to greater amounts of funding for research and a larger number of academics dedicated exclusively to research, but still, the researcher academics continued being a minority until the late 1990's.

The advances achieved during the university reform were interrupted during the period of military dictatorship (1973-1989). Universities improvised a solution to respond to an increasing demand from undergraduate students since the 1970's, and started recruiting undergraduate alumni, even though they did not have postgraduate degrees (Bernasconi, 2010). At the end of the 1980s, a new profile of academics had emerged who spent most of their time teaching undergraduate courses at various universities.

The prevalence of the academic researcher in the higher education system intensified since the 1990's, partially because of an increasing public investment in science and technology, a considerable augmentation in postgraduate fellowships and the development of the predecessors of the current National Accreditation Commission. Undergraduate and postgraduate programs started to go through accreditation processes that evaluated their academic quality and with that the percentage of full-time faculty with doctorate degrees (Lemaitre, 2004; Reich, 2003). Similarly, the heavy reliance of international and national university rankings on research outcomes to rank the prestige universities worldwide (Pusser and Marginson, 2013; Pérez Mejias,

et al., 2018; Reyes, 2016) reinforced the strategic role of having a higher proportion of "research academics" (Bernasconi, 2010; Celis and Kim, 2018).

As Bernasconi (2010) commented in his analysis of the evolution of the academic profession in Chile, university administrators realized that the attributes of institutional prestige no longer depended upon the reputation of their undergraduate alumni, as used to be the case in most Latin American universities, but upon their research capacity and the positioning of their postgraduate programs.

Yet, the predominant researcher professor model has not been reflected in the composition of faculty bodies in most Chilean universities. According to the Ministry of Education, the proportion of FTE faculty with doctorate degrees increased from 14% in 2008 to 24% in 2018, considering the entire list of universities with available data (57 out of 61 for both periods). But this researcher profile is unequally represented across Chilean universities (MINEDUC, 2017). By sector, CRUCH universities, public and private, both increased their proportion of FTE faculty with doctorate degrees by 14 percentage points, whereas the increase was six percentage points for non-CRUCH private universities.

The organizational structure and mission of non-CRUCH private universities focused on teaching from the outset, relying heavily on adjunct faculty that lacked formal postgraduate education. A few non-CRUCH private universities have recently started to adjust the proportion of part-time adjunct faculty toward an increasing number of full-time faculty with PhD-degrees (MINEDUC, 2017).

Evidence shows that some academic departments at research-intensive CRUCH universities are preferentially hiring faculty with foreign PhD training (Celis and Kim, 2018). From the academic units' standpoint, it is beneficial to hire doctorate holders who demonstrate high

research capacity and formal affiliation to highly prestigious universities, which enable them to expand and strengthen their international networks to enhance international reputation and leverage resources available in other countries (Celis and Kim, 2018). Another study suggests that international PhD credentials do not guarantee faculty positions, however, if faculty candidates do not have connections with Chilean academia (Pinto, 2016).

The professionalization of Faculty Hiring Processes: Insight from the USA and European Universities

Motivated by social pressure for increasing racial diversity of academics and guaranteeing equal opportunities for female faculty, top-ranked, research-intensive universities in the USA and Europe, as ranked by the Academic Ranking of World Universities, have introduced faculty job search handbooks to help faculty on search committees to recruit a greater number of female and racial minority faculty members, particularly in STEM fields. A review of these faculty hiring guidelines was conducted to identify the most common procedures recommended during recruitment and the definition of faculty job criteria (See Appendix 1).

With some nuances, the universities surveyed – Harvard, Stanford, University of California, European universities participating in a project about hiring procedures – recommend at least four elements in the recruitment process: a) have a search committee whose members represent diverse backgrounds in terms of gender and race (USA universities); b) broad description of the job in language welcoming all applicants, as opposed to a very narrow profile; c) broad dissemination of job ads in different platforms, to seek a competitive and diverse group of applicants; d) encourage professors to discuss and reflect on how hiring criteria and their unconscious biases may be favoring candidates from particular sociodemographic profiles.

Concerning this last point, the majority of the surveyed universities do not describe the list of hiring criteria in their guidelines, but universities in the USA encourage faculty to describe in broad terms their eligibility criteria, since specific eligibility criteria may exclude qualified candidates who come from historically under-represented groups. For instance, the requirement of having a specialization in a field where the number of women is small might (un)intentionally favor the applications of men applicants, and restrict academic departments from identifying and recruiting qualified women applicants. Likewise, some of these faculty job search handbooks recommend faculty appointed to hiring committees to avoid shortcuts when evaluating faculty applications (e.g., sorting based on PhD institution prestige) and take an unconscious bias test before starting to assess applicants.

The degree of success of these institutional guidelines to guarantee the recruitment of a diverse faculty body is a controversial topic in the relevant literature, particularly in the USA, Women and racial minority faculty are still under-represented in the faculty composition of research-intensive universities, particularly in STEM fields (Sensoy and DiAngelo, 2017; Smith et al., 2004; Webber and González-Canché, 2018). Nonetheless, some studies show that when faculty become aware of their unconscious biases, there is a higher probability of considering women in the final list of candidates (Smith et al., 2015).

In sum, the existence of these institutional frameworks for hiring faculty reflects a certain degree of professionalization of the faculty hiring procedures, but more empirical research needs to be done to evaluate to what extent academic departments at the cited universities (and other universities with similar institutional policies) are actually adhering to these guidelines in the processes of faculty hiring.

Analytical and Conceptual framework

The questions presented in this article lead to two analytical exercises. The first question aims to describe the degree to which academic departments adhere to the ethos of science. To do so, I elaborated a rubric, inspired by the institutional guidelines on faculty hiring discussed above. This rubric assesses the participation of collegial bodies in the evaluation of candidates, the impartiality of recruitment, the mechanisms in place to prevent unconscious bias, and the relative importance of the criteria that measure the scientific and academic capacity of applicants to select the short list of applicants who will be invited to a job interview. Six specific procedures used during the faculty recruitment phase were analyzed: i) the description of the position and the constitution of faculty job search committees, ii) job profile description, iii) dissemination of the job advertisement. Then, another three procedures were examined in the selection of the short list of applicants: iv) pre-screening process; v) definition of hiring criteria; vi) implementation of faculty hiring criteria.

After concluding this first analysis, the second research question seeks to explain *why* academic units conduct faculty hiring processes in the way they do. In this analysis, I integrate the principle of the normative ethos of sciences; stratification and social reproduction theories (Bourdieu, 1985, 1987, 1988: Bourdieu and Passeron, 1977; Weber, 1966); and the notion that faculty-hiring processes work as a type of economy of quality (Karpik, 2010; Musselin, 2009).

The term “Economy of quality” was originally coined by Karpik (1989) and then used by Musselin (2009) to explain faculty hiring processes in the USA, Germany and France. This term describes the markets for goods and services whose “quality” is difficult to predict due to the high degree of uncertainty, imperfect information and highly subjective valuation of the singularities of the products or services (Beckert and Musselin, 2013; Karpik, 2010; Musselin, 2009). In the faculty hiring process, recruiters attempt to reduce uncertainty and may limit the job announcement

to specific groups of networks or use "shortcuts" (e.g., PhDs graduated from top ranked universities) to reduce the list of potential candidates to a small group of candidates (Marshal, 2013). Once a reliable list of applicants has been identified, faculty on job search committees judge the quality of applicants, looking for signals that could confirm and validate their perception of quality (Musselin, 2009).

According to Merton's (1973) meritocratic ethos of science, faculty will develop their judgments regarding the quality of faculty candidates by relying *primarily* on the scientific and academic performance demonstrated by the aspiring faculty candidates, rather than on any other faculty hiring criteria. This meritocratic ethos is secured because the reward system is built on peer-review procedures that validate and assess the quality or promise of research outcomes, frequently expressed in the form of scientific publications. Publications, research grants, and scientific awards contribute to the recognition of individual academics in the field, and consequently favor the institutional prestige of the academic units from which academics graduated and in which they work.

In a different approach, the tenets of economy of quality (Karpik, 1989, 2010; Marchal, 2013; Musselin, 2009) distance themselves from the normative assumption of the ethos of science and are more concerned with the processes and devices that faculty use to develop their judgement of quality of applicants. Highly skilled individuals, such as those holding doctorates, represent a special market, where their attributes are not completely visible and known. Likewise, candidates are valued in multidimensional terms and by their singularities (Karpik, 2010). According to Musselin's (2009) empirical work on faculty hiring, faculty members on hiring committees are not only seeking a researcher, but also a colleague who will potentially become a research collaborator, teach a specific class, and/or help the academic department to increase its institutional prestige.

These particularities make the process of judging the "quality" of applicants quite subjective. Chances of finding the "best fit" to the academic department's needs, including their attributes of academic merit depend on perspectives from two sides: the social construction of academic quality about the candidate by the hiring unit, and the perceptions of candidates who see the academic unit as a potential employer (Marchal, 2013).

In this framework, the degree of stratification in higher education matters significantly because it influences the opportunities that universities have for recruiting competitive candidates (Weber, 1966; Bourdieu; 1987, Youn, 1992), and consequently the opportunity for hiring the candidates that seem to better match the department's needs and culture. As such, even though the scientific ethos of rewarding research outcomes may prevail in the hiring criteria for at least the academic units at research-intensive universities, professors in faculty hiring committees will tend to favor the candidates who seem more likely to accept the job offer. Furthermore, faculty on hiring committees may consciously or unconsciously preferentially select the candidates that are similar to them in appearance, since they represent the attributes that are valued in their social strata. For instance, several studies show that faculty tend to meet and work with those who appear to be similar to them (homophily) (Roebken, 2010).

Considering the characteristics of the Chilean higher education system discussed earlier, these theoretical perspectives suggest three scenarios that can operate conjointly once faculty identify the short list of applicants. First, research capacity is one of the main attributes of prestige in Chile (Bernasconi, 2010) and university rankings are the main devices used for depicting this institutional prestige (Pusser and Marginson, 2010); all academic units are expected to intentionally seek faculty candidates with the broadest scientific capacity, who graduated from top-ranked universities, following the Mertonian principles of scientific merit. Second, even

though academic departments within the same discipline seek the candidates with the highest research capacity and use similar procedures to recruit them, not all organizational units will have the same capacity to recruit competitive candidates (Youn, 1992). Third, organizational procedures conducted during the faculty recruitment stages, and hiring criteria, will tend to reproduce the already existing social stratification of the Chilean higher education system (Bourdieu and Passeron, 1977); at least academic units will intentionally seek to recruit a diverse pool of applicants and have professionalized their faculty hiring processes.

Research design

This is a multiple-qualitative case study (Patton, 2002) of the faculty hiring processes in academic departments, in the field of economics and industrial engineering. As it was stated earlier, academic departments in industrial engineering and economics were selected because appear to have a greater degree of professionalization of the researcher faculty (Bernasconi, 2010) and offer undergraduate programs in high demand of undergraduate enrollment (MINEDUC, 2018). Both conditions suppose that academic departments in economics and industrial engineering departments have the need to recruit new faculty within the last years, and their hiring criteria will primarily reward the scientific capacity of applicants.

Comprehensive data from the latest census regarding the exact number of doctorate holders living in the country, by disciplinary field, does not exist for Chile, but the most reliable survey (Career of Doctorate Holders, 2011) shows that, by 2011, around 17% and 5% of the doctorate holders living in the country had obtained their doctorate degrees in engineering and economics, respectively.

Sampling Strategy

The sampling strategy comprises two steps. I first identified the universities that have academic departments in both fields (industrial engineering and economics); that have experienced faculty hiring processes in the last five years; that have demonstrated at least some degree of research capacity in the respective academic departments; and that were located in Santiago's metropolitan area. I selected this geographical region, instead of others, because the majority of Chilean have their main campuses or branches in Santiago, and their location was convenient to visit their campuses multiple times within a short period.

Second, I used the maximum variation principle (Merriam, 2009) to select four universities (four economics and four industrial engineering departments) based on their ascription to CRUCH, the level of accreditation of these universities, institutional prestige, and the research capacity of their academic departments. Table 1 describes the institutional characteristics of these universities in general terms, the features of the faculty body in each relevant academic department, and the number of faculty interviewed per academic department. In order to safeguard the confidentiality of the participants, the original names of the universities were changed using cardinal points, and institutional characteristics are broadly described. The research capacity of the specific academic departments was labeled according to the number of dollars obtained through the most competitive scientific grant funded by the Chilean government and the proportion of faculty with doctorate degrees working at the department in March 2017.

Table 1: List of Universities Where Faculty Are Currently Employed

University Characteristics				Economics		Engineering	
University Name (CRUCH status)	**Years of accreditation; Areas**	**University Ranking in Chile & International**	**Undergrad Enrollment; % Students from Private High Schools**	**Research Capacity / Brief Description of Composition of Faculty Body**	**Interviewed Faculty who at Least Have Participated in One Faculty Hiring Process**	**Research Capacity / Brief Description of Composition of Faculty Body**	**Interviewed Faculty who at Least Have Participated in One Faculty Hiring Process**
University of the North (CRUCH)	6-7 years; all areas	Top 3; Top 500	More than 20,000; 40%-60% from private high schools	**High Research Capacity** 26 faculty in tenure track positions; 1 without doctorate degree, 3 women. 11 were hired within the last 5 years. 9 earned undergraduate degree in the same academic department. 21 conducted their doctorate degree at one of the top 50 ranked USA universities.	1. *Dean* 2. *Associate professor (Chair Job Search)* *3. Associate Professor* *4. Professor* *5. Professor* *6. Adjunct professor* *7. Adjunct professor* *8. (female)* *Emeritus professor*	**High Research Capacity** 17 faculty in tenure track positions; all completed doctorate degrees, none women. 6 were hired within the last five years. 13 earned undergraduate degree in the same academic department. 15 conducted their doctorate degree at one of the top 50 ranked USA universities.	*1. Dean* *2. Associate Professor* *3. Assistant Professor** *4. Assistant Professor** *5. Assistant Professor**
University of the Northwest (Non-CRUCH)	4-5 years; all areas	Top 6; Non-Ranked	Less than 20,0000; More than 60% from private high schools	**Moderate Research Capacity**** 16 tenure track faculty; all completed doctorate degrees, 3 women. 6 were hired within the last five years. 9 studied their undergraduate at one of the three top research-intensive universities. 16 studied their doctorate degree at 150 top ranked universities.	*1. Professor* *2. Professor* *3. Professor* *4. Associate professor* *5. Assistant professor**	**Moderate Research Capacity**** 11 faculty in tenure track positions; all completed doctorate degrees, 3 women. 4 were hired within the last five years 4 studied their undergraduate at one of the top research-intensive universities; the rest studied undergrad at foreign universities. 5 studied their doctorate degree at 150 top ranked universities.	*1. Department Chair* *2. Associate professor (female)* *3. Associate professor* (female)*

University of the East (CRUCH)	5-6 years; all areas	Top 6; Non-Ranked	More than 20,000; Less than 20% from private high schools	**Moderated Research Capacity** 14 faculty tenure track positions; 1 without doctorate degree; 2 women. 6 were hired within last five years. 11 studied their undergraduate at one of the top research-intensive universities; the rest studied undergrad at foreign universities. 4 studied their doctorate degree at one of the top 150 ranked universities.	1. *Associated Dean Academic Affairs* 2. *Department Chair (Chair Job Search)* 3. *Professor* 4. *Associated Professor* 5. *Associated Professor** 6. *Associated Professor** 7. *Associated Professor** 8. *Administrative person in charge of process of faculty hiring.*	**Moderated Research Capacity** 18 faculty in tenure track positions; 3 without doctorate degree; 2 women. 3 faculty were hired within the last five years. 15 of them studied their undergraduate degree at the same university. 3 professors studied their doctorate degree at one of the top 150 ranked universities.	1. *Dean* 2. *Department Chair (Chair Search Committee)* 3. *Professor* 4. *Professor* 5. *Professor* 6. *Professor* 7. *Professor* 8. *Assistant Professor** 9. *Assistant Professor**
University of the West (Non CRUCH)	4-5 years; all areas except postgraduate education	Top 12; Non-Ranked	More than 30,000; 20%-40% From private high schools	*No Data Available*	*No faculty answered my interview requests*	**Low Research Capacity** 19 tenure track faculty; all completed doctorate degree; 5 women. Most of the professors completed their undergraduate degrees at universities with lower research capacities than the rest of the sample. 2 studied their doctorate degrees at one of top 150 ranked universities, whereas around 14 studied their doctorate degree at top research-intensive universities in Chile.	1. *Department Chair* 2. *(Chair Job Search)* 3. *Professor* 4. *Assistant Professor** 5. *Assistant Professor** 6. *Chair of the program Construction Engineering* 7. *Chair of the program of Industrial Engineering* 8. *Assistant Professor*.

* Professor hired within the last five years.

** Its organizational structure does not have academic departments, but a college or school that has a research area in the respective fields.

Data Collection

I sent a personalized invitation via email to all professors listed as tenure track faculty in the respective academic departments, with the exception of one economics unit at the University of the West (Non-CRUCH private), which did not post its faculty body list online. In this case, I tried to contact the department chair and administrative personnel, but received no response. This unit was not considered in the analysis. The final sample thus included seven academic departments. The data collected included semi-structured interviews with 46 faculty who had recently participated in faculty hiring processes, examination of their respective CVs, field notes during and after the interview, and several institutional documents regarding strategic plans, governing of hiring processes, job advertising and institutional hiring policies.

Analytical Approach

The analysis process consisted of three stages. The first round of coding included the interviews with department chairs of the respective seven academic departments to test a closed code scheme based on the procedures and artifacts used along the process of faculty hiring. This coding scheme draws from the work of Musselin (2009) and the practices recommended by faculty search handbooks discussed earlier. Then, all the material collected was arranged per academic department (interviews, institutional documents, job calls, field notes, CVs of professors) prior to conduct a line-by-line coding. In this second stage of coding, I used the closed codes scheme explained above as well as I added new codes as new themes emerged (Merriam, 2009; p. 176). This approach of coding allowed me to check and triangulate the different points of evidence that describe the process of faculty hiring. I compared how different faculty members of the same department described the faculty hiring process at their respective academic units, as well as contrasted and complemented this evidence with institutional documents and field notes. The result

of this second coding stage generated a thick description of how each academic department goes about its process of faculty hires. Finally, the third stage was axial coding, which allowed me to identify the relationships between the different procedures of the faculty hiring process and the institutional and disciplinary characteristics of academic departments (Corbin and Strauss, 2015).

Limitations

This study aims to elucidate how academic departments conducted faculty recruitment and the hiring criteria they use to select potential candidates, relying mostly on semi-structured interviews with faculty who have had different levels of involvement in faculty-hiring decisions. Semi-structured interviews were instrumental in revealing how academics go about the first stages of faculty hiring before any face-to-face evaluation of the candidates occurs. Yet, I acknowledge that there is a possibility that participants, aware that faculty hiring is a sensitive process, may have withheld information and/or intentionally avoided providing any non-socially-accepted information. Hence, I attempted to triangulate and collapse the evidence by interviewing as many professors participating in the faculty hiring process as possible, as well as collecting institutional documents, the faculty job ads, and faculty CVs of the hiring committee. Another limitation is that the amount of evidence about faculty hiring procedures collected by academic departments varies greatly by department, which I argue, is associated with the degree of standardization of the faculty hiring process of the respective academic departments.

Findings

Academic departments employ different mechanisms for hiring academic staff. This inquiry only considers the faculty hiring processes that aim to recruit faculty in tenure-track positions when no hiring pre-agreement has been established with candidates. Keeping this consideration in mind, findings show that academic departments have adopted an increasing number of formal and

standardized procedures to recruit and select the candidates that will receive an invitation to a job interview, as compared to a decade ago. This change responds partially to accreditation requirements and the interest of academic departments in improving their positioning in international rankings, which has led some academic departments to disseminate their job announcements in international outlets of their disciplinary field.

In what follows, this section is organized around six hiring procedures, taking into account the guidelines recommended by top ranked universities in their faculty job search handbooks discussed earlier. The first three procedures – specification of position and search committees, description of the job profile, and dissemination of the job announcement – correspond to the stages that involve the recruitment of applicants (see Table 2). The last three stages – pre-screening, definition of hiring criteria and implementation – describe the steps academic departments go through to identify the list of faculty applicants who will receive the invitation for the job interview (see Table 3).

i. Specification of the Job Vacancy and Search Committees

Academic departments at CRUCH universities extensively discuss the specific characteristics of the faculty position in their faculty councils. These collegial deliberations involve all the professors that have tenure track positions. Adjunct faculty are invited to participate in these meetings, but their participation is voluntary and they do not have the right to vote. In contrast, academic departments at private non-CRUCH universities also use their faculty council meetings to discuss the specific needs and characteristics of the job profile of academic departments, but the degree of involvement of their professors is lower as compared with the CRUCH academic departments. In all the academic departments, the dean is the one who finally approves the characteristics sought in the job profile.

Table 2 : Summary of Faculty Recruitment Procedures in Economics (Part 1/2)

Faculty Hiring Procedures	U North	U Northwest	U East
I. Definition of Job Call and Formal Configuration of Search Committees			
Definition of job profile			
Defined and approved collectively prior to	x		x
Faculty suggest the areas needed to strenghten,	x		x
Members of Hiring Committee at department level			
Dean	x	x	
Department chair	x	x	x
Faculty members	x		x
External faculty	x		x
Number of faculty appointed in hiring commitee	3-5	Uncertin	3
Diverse composition of faculty hiring committee			
Number of women			
Other category			
Open discussion about potential unconscious bias			
II. Description of the Position in the Faculty Job Announcement			
Broad description of the position	x	Uncertain	x
Eligibility criteria			
PhD degree in a field, subfield	x		x
Productivity criteria (specific number of articles, grant	x		x
Teaching experience	x		x
Other criteria			Teaching in Spanish within two years
Inclusion of language and statement that guarantees all applicants are welcome			
Application materials requested		Requested after Job Talk (application by	
PhD Degree in Economics	x		Related fields
CV	x	x	
Job Market Paper	x	x	x
Publications or job market paper	x		x
Three recommendation letters	x		x
Cover Letter	x		x
Other			
III. Dissemination of the Job Call			
Job Call is disseminated through:			
Chilean newspapers	x		x
Institutional website	x		x
Email through professors networks	x	x	x
International faculty job list of the field	x	Sometimes	x
Period Job Call is kept open	180 days	Uncertain	120 days

x: evidence collected ratifies the existence of the procedure
blank: evidence collected shows absence of the procedure
Uncertain: evidence collected is not enough to ratify the existence or absence of the procedure

Table 2 : Summary of Faculty Recruitment Procedures in Industrial Engineering (Part 2/2)

Faculty Hiring Procedures	U North	U Northwest	U East	U West
I. Definition of Job Call and Formal Configuration of Search Committees				
Definition of Job Profile				
Defined and approved collectively prior to	x	x		
Faculty suggest the areas needed to strenghten,			x	x
Members of Hiring Committee at department level			***	
Dean	x	x	x	x
Department chair	x	x	x	x
Faculty members	x	x	x	
External faculty		x	x	
Number of faculty appointed in hiring commitee	3-5	Uncertain	3	3
Diverse composition of Faculty Hiring Committee				
Number of women				
Other category				
Open discussion about potential unconscious bias				
II. Description of the Position in the Faculty Job Announcement				
Broad description of the position				
Eligibility criteria				
PhD degree in a field, subfield				
Productivity criteria (specific number of articles, grants)				
Teaching experience				
Other criteria	English, Interdisciplinary		Teaching Spanish within two years	Interdisciplinary
Inclusion of language and statement that guarantees all applicants are welcome				
Application materials requested		Uncertain		
PhD Degree in Engineering	x	x	Related fields	x
CV	x	x	x	x
Job Market Paper	x	x		x
Publications or job market paper	x		A copy of	x
Three recommendation letters	x	Not requested, since candidates are recommended by professors' networks	x	Candidates with "known" recommenders do not need
Cover Letter	x			
Other			Competitive research grants, book chapters if applies	Teaching evaluations
III. Dissemination of the Job Call				
Job Call is disseminated through:				
Chilean newspapers	x		x	x
Institutional website	x		x	x
Email through professors networks	x	x	x	x
International faculty job list of the field	x	x		x
Period Job Call is kept open	90 days	Uncertain	45 days	From 30 to 45 days

x: evidence collected ratifies the existence of the procedure
blank: evidence collected shows absence of the procedure
Uncertain: evidence collected is not enough to ratify the existence or absence of the procedure
***: Industrial Engineering at the University of the East conducts its processes of faculty hiring with a centralized faculty hiring committee, made up by university administrators

At the University of the Northwest, particularly, the decision to hire someone in many cases results from the "opportunity" of hiring an "exceptional" professional, who is directly connected with someone in the professors' network. As described by an associate professor affiliated to the area of economics, it is not uncommon for a highly reputed academic to come and say, "I would like to work [at this university] or we hear that they are looking for someone with an extraordinary profile for a faculty job. [In that case], the department analyzes the need to hire [the candidate] and discusses it with the dean and vice-president of academic affairs".

The practice of hiring faculty by opportunity, without going through the formal process of defining a faculty job profile, is not unusual at academic departments in the University of the West (private non CRUCH) and the University of the North (private CRUCH), but it is increasingly uncommon. The University of the East (public CRUCH) has recruited all its faculty tenure track positions through public faculty position announcements since 2009.

At CRUCH universities, faculty appointees on hiring committees are typically associate professors, frequently experts in the subfield in which new faculty members are being hired, and/or have administrative responsibility in their respective academic departments, such as department chair, associate director of research or associate academic director.

At the University of the Northwest, there is no formal hiring committee, but rather faculty with administrative responsibility, such as the dean, associate dean and department chair, assume the tasks of recruitment and selection of faculty candidates. The professors who are experts in the subfield will be asked to give their opinion regarding the candidate qualification after the candidate gives their job talk or have face-to-face interviews.

In the Engineering Department at the University of the West, the job search committee comprises two professors from the areas where faculty will be hired, the department chair and an

external professor affiliated to another academic department. This latter academic is invited to guarantee the transparency of the process.

The University of the East has an additional centralized faculty hiring committee, since this university decided to recruit new faculty for all its departments all at once in 2009. This centralized faculty hiring committee is in charge of disseminating the faculty position announcements, previously defined by the respective academic departments, receiving applications and eliminating the applicants who do not meet the minimum eligibility requirements. This centralized faculty hiring committee comprises the highest authorities of the university – vice-president of research, academic affairs, provost, general attorney – and external, well-reputed academics.

In this context, it is worth mentioning that none of the academic departments in the sample were concerned about how the socio-demographic profiles of faculty search committee members may affect the final hiring decisions. Likewise, appointments to faculty hiring committees do not seek representation from specific gender, racial or sociodemographic status groups.

ii. Description of the Job Advertisement

Engineering and Economics at the University of the Northwest did not disseminate their faculty job advertisements publicly when they hired their latest faculty members. Excluding these two cases, findings show that job advertisements were described in broad terms for the remaining five academic departments in the sample, but in general the degree of specification and material requested from candidates is greater for the industrial engineering academic departments as compared with economics.

Job announcements at industrial engineering departments require, and specify as a desirable condition for eligibility, that candidates have earned a doctorate degree in engineering or

a related field and have expertise in a specific area of industrial engineering (e.g., robotics, finances). Application materials requested include a CV, a cover letter, copies of the three to five most recent publications published in peer-review journals that are indexed in Web of Science (WOS), and three recommendation letters. Additionally, the engineering department at the University of the East requires a photocopy of the degree and its translation when issued in a language other than Spanish. In cases when the candidate has written book chapters, a copy of the first page of the respective book chapter is requested, which is a common standard for all departments at the University of the East. The job announcements at the University of the North and University of the East highlight the fact that candidates are expected to teach undergraduate courses in Spanish within two years of being hired, conduct independent research, develop strong relationships with the industrial sectors and participate in technology transfer projects. Industrial engineering at the University of the North sets English as a requirement. The University of the North as well as the University of the West both highlight the importance of interdisciplinary work in their faculty position announcements.

In turn, economics departments require applicants to have a doctorate degree in economics or finance and demonstrate "strong" research potential and teaching experience. Candidates have to submit a CV, three recommendation letters, a cover letter, and one research paper, also known as the job market paper. Economics at the University of the East states in their job posting that candidates will have to teach in Spanish within two years after the first day of hiring. University of the North has a similar expectation, according to what professors said in my interviews, but Spanish language proficiency is not listed in the job announcement.

iii. Dissemination of Job Announcements

Academic departments at the North and East universities (CRUCH universities) broadly disseminate their faculty position announcements over a number of platforms. For years, they relied on national circulation newspapers, their institutional websites and professors' networks. More recently, these universities have also started to disseminate their faculty position announcements in English and use the international platforms of the professional associations of their respective fields, as well as associated websites. Particularly, economics departments at the University of the North and East follow the schedule and format imposed by the American Economic Association (USA labor market), where all employers disseminate their job announcements during the same period (October-January).

The engineering department at the University of the West (private, non-CRUCH university) started to broadly disseminate its job announcements around 2012, after the department had decided to boost its research capacity and a new dean assumed the position.

> *"The process through which I was hired was more informal. After the new dean took office, we have tried to formalize the process. Job announcements are broadly disseminated in newspapers and we also use our disciplinary networks".*
>
> *(Department Chair, Industrial Engineering, University of the West).*

In contrast, economics and engineering departments at the University of the North West (private non-CRUCH university) rely exclusively on their professors' networks to recruit faculty candidates. As previously stated, it is not uncommon that doctorate holders who have connections with the professors working at this university directly inquire about the possibility of them being hired by the institution. A common strategy used by applicants interested in working at this university is to voluntarily offer a presentation of their research in the seminar of the respective program. If the academic department is interested in the candidate, this presentation would be

treated as a job talk and becomes one of the main pieces of evidence of the candidate's research portfolio.

> *"Look, there are some private universities in Chile that are adhering to more formal hiring procedures... such as participating in the US job market. This university does not officially participate in the academic job market. So, the relevance of who you know plays an important role… Who professors know, who comes knocking on the door."*
>
> *(Associate Professor, Economics, University of the Northwest).*

Partially, this practice of recruitment via faculty networks explains the absence of data on the number of job applications at the University of the Northwest.

iv. Pre-screening to Identify the Candidates who Meet Eligibility Criteria

All academic departments with public job announcements have as a first step a secretarial filtering process to discard candidates who do not meet the eligibility requirements. With some differences, the eligibility criteria include a PhD, or a PhD close to completion, proven research capacity, teaching experience and technical expertise in a related field of the discipline

Considering only academic departments with job calls publicly disseminated, the number of applications received depends on the characteristics of the disciplinary job market and the level of prestige of the academic department, which reflects its research capacity. Economics departments at the University of the North and East started with a pool of applicants of more than one hundred, which is more than four times the volume received by the engineering department with the highest number of applications. Within the same disciplinary field, findings show that the number of applications is proportional to the level of prestige and research capacity of the academic units.

Table 3: Summary of Procedures to Select the Short list of Candidates in Economics (Part 1/2)

Faculty Hiring Procedures	U North	U Northwest	U East
IV. Pre-screening Process: Criteria select applicants who passes second phase			
Application packages that meet elegible requirements	x		x
Other considerations	- Graduated from top ranked univesities - Language, nationality, research topic associated to Chile - younger than 40 years old		
Number of applications received in the last process of Faculty Hiring	180 received, 160 passed the first filter	Uncertain	100 received, 80 passed the first filter
V. Conceptual and operational definition of Hiring Criteria used to shorten list of candidates			
List of criteria used to shorten list of applicants			
Research productivity /Research potential:	x	x	x
Prestige of PhD Granting University	x	x	x
Teaching experience	x		x
Alignment technical expertise with department expectations	x	x	Desirable, but if the candidates' expertise is different to what department needs, it can also pass to the following phase.
Chances that the candidate will accept the job offer	x		x
Other critera	Known by current professors or are known by professors' network	Known by current professors or are known by professors' network	Pass pscyhological interview
VI. Implementation of the hiring criteria to shorten list of candidates			
Number of faculty reviewing faculty application packgages	2		2
Written definition how each criteria are clearly defined	Uncertain		
Assumptions about the availability and preference of candidates	x	x	x
Setting where faculty discuss about faculty selected	Faculty council	Uncertain	Faculty council
Analysis how hiring criteria introduce bias in the process of faculty hiring			

x: evidence collected ratifies the existence of the procedure
blank: evidence collected shows absence of the procedure
Uncertain: evidence collected is not enough to ratify the existence or absence of the procedure

Table 3: Summary of Procedures to Select the Short list of Candidates in Industrial Engineering (Part 2/2)				
Faculty Hiring Procedures	**U North**	**U Northwest**	**U East**	**U West**
IV. Pre-screening Process: Criteria select applicants who passes second phase				
Application packages that meet elegible requirements	x	x	x	x
Other considerations			- Research grant experience - Passed psychological interview	
Number of applications received in the last process of Faculty Hiring	25	Uncertain	6	10
V. Conceptual and operational definition of Hiring Criteria used to shorten list of candidates				
List of criteria used to shorten list of applicants				
Research productivity /Research potential:	x			
Prestige of PhD Granting University	x	x		
Teaching experience	x	x		
Alignment technical expertise with department expectations	x	x	Desirable, but candidates can pass the following phase if they have good publication records	x
Chances that the candidate will accept the job offer	x	x	Uncertain	x
Other critera	Known by current professors or are known by professors' network	Known by current professors or are known by professors' network	Known by current professors or are known by professors' network	Known by current professors or are known by professors' network
VI. Implementation of the hiring criteria to shorten list of candidates				
Number of faculty reviewing faculty application packgages	Job search committee members	Uncertain	Job search committee members	Job search committee members
Written definition how each criteria are clearly defined	x	Uncertain	Uncertain	Uncertain
Assumptions about the availability and preference of candidates	x	x		
Setting where faculty discuss about faculty selected	Faculty council	Uncertain	Faculty council	Dean Office

x: evidence collected ratifies the existence of the procedure
blank: evidence collected shows absence of the procedure
Uncertain: evidence collected is not enough to ratify the existence or absence of the procedure

The economics department at the University of the North, which receives the largest number of applications, uses three additional criteria for narrowing the pool of applicants: below the age of 40, graduated from one of the top-ranked international universities, and demonstrates a connection with Chile or Latin-America. Spanish-language proficiency, nationality and research interest applied to Chilean reality are used to indicate the candidate's likelihood to adapt and continue working in the academic department for a prolonged period.

The industrial engineering department at the University of the East does not apply additional pre-screening criteria, but the university's centralized hiring committee requires all candidates who meet the eligibility criteria to take a psychological test prior to sending the application material to the respective academic departments. The personality test is administered by a private consultancy firm on behalf of the University of the East. "We adopted this procedure, because we had situations where we identified a pool of intellectually brilliant faculty members who had several personality issues that prevented us from hiring them" (Department Chair, Industrial Engineering, University of the East). Yet, the economics unit at the University of the East does not apply this procedure, since a large number of selected applicants are not living in Chile when they submit their application. In the rest of the academic departments at the other universities, candidates take a psychological test at the final stage of the selection process, only after faculty have interviewed them.

v. Specification of the Faculty Hiring Criteria

One of the most important procedures in faculty hiring processes occurs after the faculty members on the hiring committees identify the applicants who best meet the eligibility criteria and represent the most qualified cohort of applicants. This procedure – identifying the short list of applicants

who will receive a job interview invitation – relies on similar hiring criteria across academic units, but, as will be explained in the next section, academic departments apply such hiring criteria according to the number of applications and degree of competitiveness of the cohort of applicants, as well as the specific needs of the academic department.

As described by interviewees, the process of evaluating faculty applications considers multiple criteria simultaneously (see Figure 1). Faculty on job search committees assess candidates using a set of basic and differentiating criteria, while also considering additional elements that seek to confirm the real interest of the candidates in accepting the job offer, and the likelihood of their holding the job for a prolonged period of time, as well as the reliability of the information provided by the candidate in the application package. Basic criteria typically include research productivity or promise of research productivity, the level of prestige of PhD-granting universities (mainly in economics), teaching experience and alignment of the disciplinary expertise with the needs of the department. Differentiating criteria involve mainly networks affiliation, experience leveraging grants, and any other type of exceptional characteristics that distinguish candidates from the rest.

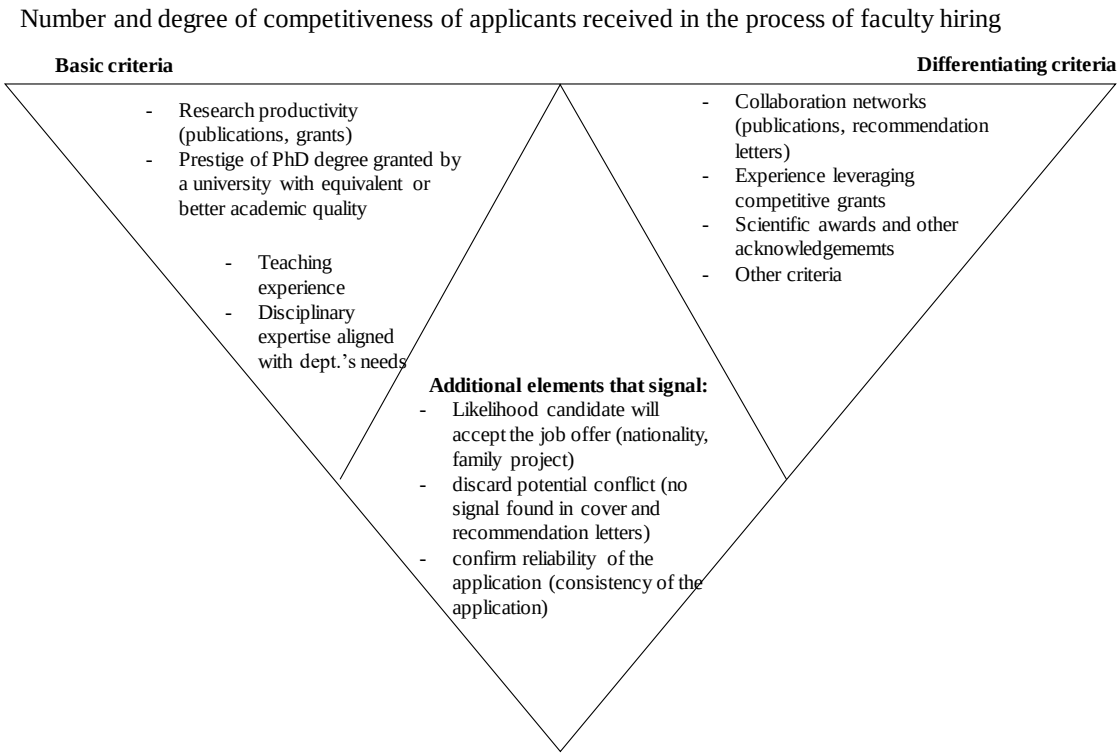

Figure 1: Multiple Criteria Used to Evaluate Faculty Applicants

As the following quote explains, most faculty members use some type of scoring system to weigh the aforementioned hiring criteria, but the specific formula is difficult to replicate and highly depends on the academic profile of applicants.

> *"It is difficult to prescribe a formula, but if I had to express it in terms of percentages, I would assign 40% of the score to the number of peer-reviewed articles. After that comes the level of prestige of the university. Where did the person study? […] This is around 30%. Then, we look at the recommendation letters, considering who wrote the letter and its content. This accounts for around 10-15% of the evaluation. And the job market paper is around 10%. Typically, those who have one or two peer-reviewed publications are a minority and they stand out from the rest, but then you compare elements […] And*

then, you have the problem that the candidates you rank in the first places may not accept your job offer… This is not easy, because there are many things you are considering at the same time."

(Associate Dean, Economics, University of the East).

As described by professors, typical measures of research productivity include the number of peer-reviewed articles published, the selectivity of the journals, book chapters or other type of publications, grants, and any other kind of scientific and academic awards (e.g. best publication, thesis award, etc.).

The prestige of doctorate programs is evaluated according to university rankings, mainly the Academic Ranking of World Universities (ARWU), also known as the Shanghai Jia Tong ranking. Academics also rely on what they know concerning the academic departments and the professors leading their disciplinary fields to judge the academic quality of the PhD-granting department. As described by some professors, prestige of PhD granting academic department signals several things at the same time. "Reputation of institutions says something about the network, and we use it sometimes to differentiate candidates. We also understand that some prestigious institutions request publications in certain types of journals, or have a larger number of requirements for completing the doctorate degree, as compared to other universities. Thus, this provides a point of reference" (Department Chair in the Area of Industrial Engineering, University of the West).

Teaching experience is evaluated considering the number of years and courses in which candidates have taught classes as solo instructors. Alignment of the candidate's profile with the disciplinary needs of academic departments is described in terms of the formal specialization of the educational degrees, the content of the publications and courses taught in the past, professional

and academic experience, and any other data alluding to their disciplinary expertise in the cover and recommendation letters. Network affiliation is assessed by the reputation of the individuals who recommend the candidates as well as the reputation of co-authors.

Recommendation letters are examined from different angles. The information contained in these letters – content and reputation of the recommenders – is used to evaluate the reputation of the candidate's faculty adviser and members of the candidate's networks, as well as to confirm and refine the judgement of the academic quality of applicants. Likewise, faculty also examine the content of recommendation letters, searching for any signal that warns that candidates might not adapt to the institutional culture or have career plans that differ from the goals of the academic department. In addition, faculty use the content of the letter of recommendation to get a sense whether candidates may accept a job offer from their academic department.

In the case of the engineering department at the University of the West, letters are not necessary for the candidates whose recommending party is known by the professors on hiring committees. In case of the University of the Northwest, which does not have open job announcements, the attributes of candidates are judged on the basis of a job talk and face-to-face conversations with faculty in the candidate's field. Since the candidate identification process relies on the networks of the professors at this university, the candidates recently hired by these departments did not have to submit recommendation letters.

Faculty members at all academic departments acknowledge that candidates acquainted with departmental professors, or any member of their own networks, are differentiated from the rest of applicants. As the following quote indicates, network adscription does not guarantee inclusion in the short list, but it is used as a differentiating attribute.

"All candidates have to apply through the American Job market; we do not make special distinctions a priori, but if we know them [undergraduate alumni], we know their work capacity, so at equivalent academic performance, this can be an extra point."

(Professor, Economics, University of the North).

Last, but equally important, candidates must explain in their cover letter why they want to work at the academic department. Faculty expect to see some indication that their family situation or professional background confirms their compatibility for working in Chile (e.g., research interest applicable to Chile, spouse working in Chile). As discussed further on, the importance of these latter attributes are more significant for academic departments receiving a large number of foreign applicants who do not have any evident link with Chile and/or have a profile that seems "too competitive," to the extent that they make their real interest in working in Chile less credible.

It is worth mentioning that none of the academic departments included in the sample have discussed how the definition and implementation of faculty hiring criteria could be exerting some bias towards a specific group of faculty applicants.

vi. Implementation of the Hiring Criteria to Shorten the List of Candidates

The way in which hiring criteria are applied depends on the number and quality of the applications received. The economics departments at the University of the North and the University of the East each identified close to one hundred applicants, who passed their respective pre-screening criteria. In these academic departments, each hiring committee member individually reviews a portion of the entire set of applications. To guarantee the reliability of the process, each application is reviewed by at least two professors. In Industrial Engineering departments, where the number of

applications ranges from 10 to 12 per opening, each faculty member evaluates the entire list of applications. In both fields, it is common for job search committee members to ask other faculty members their opinion regarding the quality of a paper, if the job search committee lacks the specific expertise.

Within the same disciplinary field, academic departments with high research capacity receive a greater number of applications than academic departments with low and moderate research capacity, and can therefore be stricter with respect to the alignment between the academic department's requirements and the candidate's profile. Asked about the profile of candidates, professors at academic departments with high research capacity describe a profile of candidates that graduated primarily from foreign top-ranked universities and have peer-reviewed articles than the profile described by academic units with a lower level of research capacity.

On the other hand, academic departments at universities with low and moderate research capacity depend largely on their new hires to meet accreditation requirements and improve their positioning in national and international university rankings. This explains why academic units with less research capacity may be willing to recruit candidates with high degrees of productivity, even if the candidate lacks the expertise in the subfield required by the academic department.

> *"We will prefer candidates in the areas that we need, but we do not always get people in the exact areas we need… and then you make a concession. At this moment, we are at a point where we need to improve our research productivity for accreditation purposes, so we will still be open to making an offer to a candidate who has a PhD in a related area, but does not work in the area we need to strengthen."*
>
> *(Department Chair, Industrial Engineering, University of the East).*

Likewise, professors on hiring committees evaluate the possibility of recruiting faculty applicants, taking into account the positioning of their academic units as compared with their competitor departments when recruiting. This self-assessment process reveals two situations. On the one hand, professors understand higher education stratification and make decisions considering their positioning vis-a-vis their national and international competitor departments when they recruit candidates. Second, the opinions of faculty members reflect a self-censorship process that has implications for exclusion beyond the meritocratic criteria established above. If the candidate is "too good" and/or belongs to different academic networks, professors will tend to think that these candidates will not accept the job offer, and will not invite them for an interview.

This self-censorship process occurs more frequently in economics departments that receive a large number of applicants, than in engineering departments. The following two quotes reflect these self-censorship rationales.

> *"We would probably not contact candidates who graduated from any of the top-5 international universities, because they would probably have 200 better offers than ours".*
>
> *(Dean, Economics, University of the North).*

> *"If the candidate studied at [name of university], we would probably not include him, because he would most likely receive an invitation to a job interview from University of the North and end up there".*
>
> *(Associate Dean, Economics, University of the East).*

At engineering departments, faculty also filter applicants based on the potential offer they might receive, but since the number of applications is lower, they look for additional information before excluding candidates from the list of those who will receive an invitation to a job interview.

As the department chair of the engineering department at the University of the West explains, "[they] interview all applicants that meet the eligibility requirements or are close to finishing their PhD degree. If the person has not completed the PhD, we ask them directly about their plans, and leave them in our dataset for later. If we are not sure about something, we try to ask for more information. This generally helps us to get a better sense of the interest of the candidate to work here".

Discussion

This study had two goals. First, it aimed to identify both whether and how academic departments have and utilize hiring procedures that commit to the meritocratic ethos of science during two phases of the hiring process: a) the recruitment of faculty candidates, and b) the specification and implementation of hiring criteria to select the candidates who will receive an invitation for a job interview. Second, this study sought to identify which institutional and disciplinary characteristics explain the ways in which academic departments end up recruiting and selecting the short list of applicants to be interviewed.

The normative ethos of academic merit – individuals shall be primarily selected and rewarded on the basis of their intellectual contribution (Merton, 1973) – and the set of hiring standards recommended by top-ranked universities during faculty hiring processes (see Table 4 in Appendix), were used to establish a set of minimum standards of hiring procedures that adhere to the meritocratic ethos of science. These minimum standards include the participation of collegial bodies in the evaluation of candidates, that job announcements be publicly disseminated, the use of formal mechanisms to prevent unconscious bias, and hiring criteria that assign greater weight to the scientific and professional expertise of candidates, as compared to other hiring criteria.

The findings show that all of the academic departments examined fail in the implementation of formal mechanisms for preventing unconscious (or conscious) bias and none of them discuss whether the sociodemographic composition of faculty job search committee matters along the process of faculty hiring. Still, most of the academic units studied have faculty hiring practices that meet the aforementioned hiring standards to some extent, depending on their organizational status (CRUCH or non-CRUCH university), the number of applications received and the degree of competitiveness of applicants. The number of applications received is directly associated with the decision about disseminating the job announcement openly and also with the research reputation of the departments and the disciplinary field.

Recruitment of Faculty Applicants

In the stages that involve recruitment of applicants, academic departments in CRUCH universities have a greater degree of participation of collegial bodies in the process of defining the job profile and creating a formal job search committee as compared with non-CRUCH universities. These procedures are directly associated with the organizational structure of CRUCH universities. Academic departments at CRUCH universities heavily rely on faculty councils at all levels in the decision-making processes (department faculty council, school faculty council, deans' council, etc.), which implies a greater degree of bureaucracy in their daily administration processes than at non-CRUCH universities.

Private non-CRUCH universities also have faculty councils and consultative bodies, but the decision-making processes during the recruitment stages primarily relies on a small group of academic administrators, such as department chairs, deans and vice-presidents of universities. The lower levels of bureaucracy at non-CRUCH universities generate the conditions for conducting faculty-hiring processes in the way that the academic administrators consider most appropriate.

For instance, findings show that the University of the Northwest (private, non-CRUCH) exclusively relies on their professors' networks to disseminate their job announcement, a decision that was adopted by the university's authorities. The engineering department at the University of the West (private, non-CRUCH) started to adopt more formal faculty recruitment procedures in the last five years, when a new dean took office in the school. Academic departments at CRUCH universities, on the other hand, broadly disseminate job announcements on several platforms.

The decision to disseminate the job announcement by relying exclusively on the faculty's network disproportionally favors the candidates who are known by professors' networks, by excluding candidates who do not belong to such networks even before evaluating the academic attributes of candidates (Brink and Benschop, 2013; Nielsen, 2015).

In sum, it is worth mentioning that neither CRUCH university status nor a greater degree of authority of faculty councils guarantees that academic units will adhere to the meritocratic ethos of science in the stages of the faculty recruitment. In fact, having institutional procedures that guarantee the broad dissemination of job announcements, participation of a faculty collegial body in the definition of the job profile, and formal faculty search committees are only enabling conditions that decrease the risk that faculty overvalue the candidates' network as compared with their intellectual contribution and potential.

Selecting the Short List of Applicants

To select the short list of applicants, faculty on hiring committees conduct a pre-screening process to identify a list of competitive applicants, and then define and implement hiring criteria that identify the candidates who will be invited for a job interview. The findings show that the way in which academic departments conduct these procedures is associated with the number of applications and degree of competitiveness of the cohorts of applicants, which is related to the

research capacity of the academic departments in a stratified higher education system and the characteristics of the disciplinary market.

Within the same disciplinary field and considering only departments with public job announcements, the units with high research capacity and prestige receive a greater number of applications and have a more competitive profile of applicants than academic departments with moderate and low research capacity. As expected, and consistent with what stratification and social reproduction theories (Bourdieu and Passeron, 1977; Bourdieu, 1985, 1987, 1988; Weber, 1966), the positioning of academic units in the stratified higher education system is reproduced and reflected in the unequal capacity that academic departments have in attracting competitive candidates.

The characteristics of disciplinary labor markets highly influence the number of applications received. The economics labor market is highly internationalized and doctorate holders in the field are expected to submit many applications simultaneously, since job requirements are standardized. Consequently, economics departments in the sample receive about four times the number of applications and therefore have a greater workload to identify the short list of applicants. They are more skeptical of the real interest of candidates in working at their universities, as compared with engineering academic units. Economics department at the University of the North uses “shortcuts” to come up with a “qualified” list of candidates, such as whether the candidate has a direct connection with Chile or Latin America, as well as considering the level of prestige of the candidate’s PhD-granting university. Industrial engineering department at the same University of the North also receives a good number of foreign applicants and has the same concern of identifying a reliable list of applicants who might actually accept an offer, but

this academic units does not take shortcuts. Instead, faculty review the entire application material of all the candidates once individuals have passed the eligibility criteria.

As described by some of the faculty search handbooks of top-ranked universities (e.g. Harvard, 2016), the use of shortcuts to include and exclude candidates are common practices during the pre-screening stage, although such practices are a source of unconscious bias. For instance, discarding candidates by nationality or the level of prestige of the PhD-granting university favors Chilean (and Latin American) applicants who studied at top ranked universities in the USA and Europe, prior to any evaluation of their scientific productivity.

After faculty have conducted the pre-screening processes, all academic departments seek candidates with a high degree of research productivity, primarily measured by peer-reviewed articles and graduation from top ranked international universities (Celis and Kim, 2018). Demonstration of expertise and teaching experience in the disciplinary fields needed by the department is also considered. Among these criteria, research productivity is the most important element when selecting the short list of applicants, which is in line with the universal principle of academic merit of the ethos of science (Merton, 1973).

Yet, while faculty judge the quality of the candidates based on the above criteria, they are also making a number of calculations that do not always lead to selecting the candidates with the highest degree of productivity. In line with what the tenets of the economy of quality idea argues (Karpik, 1989; Karpik, 2010, Musselin, 2009), faculty on hiring committees judge the attributes of applicants in relative terms, taking into account how the characteristics of the candidate align with the needs of the department, and the chances of successfully recruiting the candidate. All these calculations take place within a context of high uncertainty, imperfect information, time constraints, and subjective insights that represent how faculty see their academic units in the

stratified higher education system. Specifically, the construction of the subjective judgement about which of the candidates will likely accept the job offer leaves room for unconscious bias, especially if the academic departments do not have the same amount of information for all the candidates.

This bias is evident in the cases of the economics departments that receive a high number of applications. Economics at the University of the East (moderate research capacity) comment to have excluded a competitive candidate linked to University of the North (high research capacity) just because their professors assume that this candidate will be hired by their undergraduate alma mater. Economics at the University of the North excludes the candidates who are linked to the top-ranked international universities, because it is assumed that they will receive better offers from international universities.

These latter findings not only differ from the meritocratic ethos of science and the hiring practices recommended by faculty search handbooks of top-ranked universities (Stanford, n.d.), but also reveal a mechanism of social reproduction that occurs before professors have any face-to-face contact with the candidates (Bourdieu, 1987, 1988, Weber, 1966). Professors' perceptions about the likelihood that competitive candidates will accept the job offer reflect how these professors see the power and prestige that their respective academic units hold in the national and international higher education. This subtle process of exclusion and inclusion of candidates demonstrates the limits of the normative ethos of academic merit, and stresses the importance of generating mechanisms that account for conscious or unconscious bias along the process of faculty hiring.

Policy Implications and Final Remarks

The Chilean government's decision to increase the number of doctorate holders drew, at least in rhetorical terms, from the promises of the knowledge economy and human capital (CNIC, 2006;

Eyzaguirre et al., 2005). It is the government's belief that a greater proportion of doctorate holders participating in the workforce will positively augment the national scientific and technological capacity, which will result in greater economic productivity and social prosperity (CNIC, 2006). In the long-run, this economic and social prosperity is supposed to help reducing the gaps between rich and poor (Eyzaguirre, 2005), because it sets education and scientific knowledge at the core of the economic strategy. Education and knowledge are "capital[s] whose property can be distributed in a more egalitarian way than the [physical] capital or natural resources" (CNIC, 2007, p.10).

In order to enable the equalizing power of education, the basic assumption is, first, that there is a labor market capable of absorbing the new generation of highly skilled individuals, and, second, that the labor market rewards individuals according to their productivity.

At least with respect to the doctorate holders, the evidence collected in this study suggests that the promise of the knowledge economy faces several barriers in its materialization. In addition to the concerns that the Chilean labor market might not be able to absorb this new generation of doctorate holders (González and Jiménez, 2015), because the expenditure in research and development is too low (0.37% of GDP), the present study shows that academic departments – the main employer of doctorate holders in Chile (MINECON, 2012; 2015) – lack hiring procedures that can guarantee that aspiring faculty candidates are evaluated primarily on their academic merit.

All of the academic departments included in this study lack mechanisms that prevent unconscious bias. Faculty network-based recruitment practices, the use of shortcuts to reduce the number of applicants before fully reviewing their applications and the inclusion/exclusion of candidates because they do not belong to certain networks, are not neutral decisions, and have far-reaching implications for who is chosen and not chosen for the positions.

Public policy makers in charge of evaluating the effectiveness of fellowships, as well as the Chilean scientific community concerned about the lack of jobs for doctorate holders (ANIP, 2018), must encourage academic units to make their faculty hiring processes more transparent. Specifically, the institutional accreditation standards for assessing the institutional management of universities could include questions concerning the presence or absence of mechanisms that prevent unconscious bias in faculty hiring processes and encourage open job announcements. In addition, academic affairs offices at research universities interested in improving their positioning in the university rankings could create their own handbooks of faculty job search, taking into consideration the recommendations of top-ranked universities elsewhere. Having faculty job search handbooks, with a detailed list of good practices of faculty hiring, may incentivize faculty on hiring committees to openly discuss how their mechanisms of hiring are favoring specific profile of faculty applicants.

In this regard, it is worth mentioning that a formal faculty hiring process does not guarantee that academic departments will exert a greater degree of meritocracy in the processes of faculty hiring, but it will increase the awareness of the organization concerning the factors that may be introducing conscious and unconscious bias, and consequently, the option of addressing such biases (Sensoy and DiAngelo, 2017).

This research shows the importance and need to expand the empirical evidence on how universities and their respective academic departments go about processes of faculty hiring. The relevance of such types of studies is critical in Chile and elsewhere at this time, when education is increasingly called into question regarding its power to equalize economic and social opportunities (Bellei et al, 2018; OECD, 2016). Future research should critically analyze what is the profile of faculty candidates that most benefits (and loses) in the current conditions of faculty hiring in Chile.

Likewise, other studies should examine whether and how having formal procedures for faculty hiring (e.g. diverse sociodemographic composition of faculty on job search committees, open faculty advertisements, etc.) change hiring decisions. Studies on how individual professors create their judgments about candidates' quality are also needed to better understand how their individual perceptions are shaped and influenced by disciplinary and institutional contexts.

This type of studies will contribute to expand a line of research on how processes of faculty hiring take place, which is still an understudied topic in the field of faculty careers (Brink and Benschop, 2013; Musselin, 2009; Nielsen, 2015). Simultaneously, it will also contribute to unpack the internalized assumptions that rule the inclusion and exclusion of individuals in the academic profession (Posselt, 2018). Only when the mechanisms that reproduce social advantages are identified and addressed will the "promise" of human capital and the "knowledge economy" have a better chance of materializing.

References

ANIP. (2018). Inserción laboral de investigadores. Informe de resultados: 2da Encuesta de Inserción de Investigadores con Postgrado. Santiago de Chile, Asociación Nacional de Investigadores en Postgrado. Retrieved from https://anip.cl/informe-insercion-2018/

Arriagada, P. (1986). Financiamiento de la educación superior en Chile 1960-1988.Santiago de Chile: FLACSO.

Bartsch, R., & Dickson, K. L. (2015). How SoTL can aid in the academic job search. In R. A. Smith & B. M. Schwartz (Eds.), *Using SoTL to enhance your academic position*: Society for the Teaching of Psychology.

Beckert, J., & Musselin, C. (2013). Introduction. In J. Beckert & C. Musselin (Eds.), *Constructing Quality: The Classification of Goods in Markets* (pp. 1-33). Oxford Scholarship Online.

Bellei, C., Cabalín, C., & Orellana, V. (2018). The student movement to transform the Chilean market-oriented education system. In Cortina, R. & Lafuente, C. (Eds). *Civil Society Organizations in Latin American Education. Case Studies and Perspectives on Advocacy*. New York: Routledge. Doi: 10.4324/9781315104874

Bernasconi, A. (2003). *Organizational diversity in Chilean higher education: Faculty regimes in private and public university* (Doctoral Dissertation). Boston University, Boston, Massachusetts.

Bernasconi, A. (2008). La profesionalización de la academia en Chile. *Calidad en la Educación* (28),15. doi:10.31619/caledu.n28.199

Bernasconi, A. (2010). La apoteosis del investigador y la institucionalización de la profesión académica en Chile. *Estudios Sobre Educación 19*, 139-163.

Bernasconi, A., & Rojas, F. (2003). *Informe sobre la Educación Superior en Chile: 1980-2003*. Retrieved from: http://unesdoc.unesco.org/images/0014/001403/140395s.pdf

Berríos, P. (2008). El sistema de prestigio en las universidades y el rol que ocupan las mujeres en el mundo académico. *Calidad en la Educación*, 349-361.

Berríos, P. (2014). *The academic life of part-time professors in Chile.* (Doctoral Dissertation). State University of New York, Albany, Albany. Retrieved from http://pqdtopen.proquest.com/doc/1648172558.html?FMT=ABS

Bourdieu, P. (1985). The social space and the genesis of groups. *Theory and Society, 14*(6), 723-744.

Bourdieu, P. (1987). What makes a social class? On the theoretical and practical existence of Groups. *Berkeley Journal of Sociology, 32*, 1-17.

Bourdieu, P. (1988). *Homo academicus*. Cambridge: Cambridge: Polity Press in association with Basil Blackwell.

Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society and culture*. London/Beverly Hills: Sage Publications.

Bosak, J., & Sczesny, S. (2011). Gender bias in leader selection? evidence from a hiring simulation study. *A Journal of Research, 65*(3), 234-242. doi:10.1007/s11199-011-0012-7

Brink, M., & Benschop, Y. (2013). Gender in academic networking: The role of gatekeepers in professorial recruitment. *Journal of Management Studies, 51*(3), 460-492. doi:10.1111/joms.12060

Brunner, J. J., Meller, P., Aríztia, T., Ossandón, J., Muñoz, M., Scheele, J., & Berríos, P. (2010). *Doctores en ciencias e ingeniería: Trayectorias de estudio y situación laboral*. Retrieved from Santiago de Chile: http://www.academia.edu/2950763/Doctores_en_Ciencias_e_Ingenier%C3%ADa_Trayectorias_de_Estudio_y_Situaci%C3%B3n_Laboral

Brunner, J. J. (2014). Medio siglo de transformaciones de la educación superior Chilena: Un estado del arte. In A. Bernasconi (Ed.), *La educación superior de Chile: Transformación, desarrollo y crisis* (pp. 23-107). Santiago: Pontificia Universidad Católica de Chile.

Burris, V. (2004). The academic caste system: Prestige hierarchies in PhD exchange networks. *American Sociological Review, 69*(2), 239-264. doi:10.1177/000312240406900205

Canales, A. (2016). Diferencias socioeconómicas en la postulación a las universidades chilenas: el rol de factores académicos y no académicos. *Calidad en la educación* (44), 129-157.

Ceci, S. J., & Williams, W. M. (2015). Women have substantial advantage in STEM faculty hiring, except when competing against more-accomplished men. *Frontiers in psychology,6, 1532*. doi:10.3389/fpsyg.2015.01532

Celis, S., & Kim, J. (2018). The making of homophilic networks in international research collaborations: A global perspective from Chilean and Korean engineering. *Research Policy, 47*(3), 573-582. doi:10.1016/j.respol.2018.01.001

Chiappa, R., & Perez Mejias, P. (2019). Unfolding the direct and indirect effects of social class of origin on faculty income. *Higher Education*, doi:10.1007/s10734-019-0356-4

Clark, B. (1987). *The academic life. Small worlds, different worlds.* Princeton, New Jersey: The Carnegie Foundation for the Advancement of Teaching.

Clauset, A., Arbesman, S., & Larremore, D. B. (2015). Systematic inequality and hierarchy in faculty hiring networks. *Science Advances, 1*(1). doi:10.1126/sciadv.1400005

CNA Chile. (n.d.). Busqueda avanzada de acreditaciones Retrieved from https://www.cnachile.cl/Paginas/buscador-avanzado.aspx

CNIC. (2006). *Informe final: Consejo Nacional de Innovación para la Competitividad. Asesor del Presidente de la Republica*. Santiago: CNIC.

CNIC. (2007). Hacia una Estrategia Nacional de Innovación para la Competitividad Volumen I. Santiago: CNIC.

Corbin, J. M. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (Fourth edition. ed.). Los Angeles: Sage.

Cowan, R., & Rossello, G. (2018). Emergent structures in faculty hiring networks, and the effects of mobility on academic performance. *An International Journal for all Quantitative Aspects of the Science of Science, Communication in Science and Science Policy, 117*(1), 527-562. doi:10.1007/s11192-018-2858-8

Devine, P. G., Forscher, P. S., Cox, W. T. L., Kaatz, A., Sheridan, J., & Carnes, M. (2017). A gender bias habit-breaking intervention led to increased hiring of female faculty in STEMM departments. *Journal of Experimental Social Psychology, 73*, 211-215. doi:10.1016/j.jesp.2017.07.002

Eyzaguirre, N., Marcel, M., Rodriguez, J., & Tokman, M. (2005). Hacia la economía del conocimiento: El camino para crecer con equidad en el largo plazo. *Estudios Públicos, 97*, 5-52.

González, H., & Jiménez, A. (2014). Inserción laboral de nuevos investigadores con grado de doctor en Chile occupational. *Journal of Technology, Management and Innovation, 9*(4), 132-148.

González, S., Brunner, J. J., & Salmi, J. (2013). Comparación internacional de remuneraciones académicas: un estudio exploratorio. *Calidad en la educación* (39), 21-42. doi:10.4067/S0718-45652013000200002

Hadani, M., Coombes, S., Das, D., & Jalajas, D. (2012). Finding a good job: Academic network centrality and early occupational outcomes in management academia. *Journal of Organizational Behavior, 33*(5), 723-739. doi:10.1002/job.788

Harvard University (2016). *Best practices for conducting faculty searches*. Retrieved from Cambridge, MA: https://faculty.harvard.edu/files/fdd/files/best_practices_for_conducting_faculty_searches_v1.2.pdf

Headworth, S., & Freese, J. (2016). Credential privilege or cumulative advantage? Prestige, productivity, and placement in the academic sociology job market. *Social Forces, 94*(3), 1257-1282. doi:10.1093/sf/sov102

INE. (2018). *Nueva encuesta suplementaria de ingresos 2017*. Retrieved from: https://www.ine.cl/docs/default-source/ingresos-y-gastos/esi/ingreso-de-hogares-y-personas/resultados/2017/sintesis_esi_2017_nacional.pdf

Karpik, L. (1989). L'économie de la qualité. *Revue française de sociologie, 30*(2), 187-210. doi:10.2307/3321761

Karpik, L. (2010). *Valuing the unique: The economics of singularities*. Princeton: Princeton University Press.

Landrum, R., & Clump, M. (2004). Departmental search committees and the evaluation of faculty applicants. *Teaching of Psychology, 31*(1), 12. doi:10.1207/s15328023top3101_4

Lemaitre, M. (2004). Mecanismos de aseguramiento de la calidad: Respuestas a los desafíos del cambio en la educación superior. *Calidad en la Educación*, (21), 87-106. doi:https://doi.org/10.31619/caledu.n21.323

Li, D., & Koedel, C. (2017). Representation and salary gaps by race-ethnicity and gender at selective public universities. *Educational Researcher, 46*(7), 343-354. doi:10.3102/0013189X17726535

Lübke, E., Aye, M., Wolffram, A., Apostolov, G., O'Hagan, C., O'Connor, P., . . . Çağlayan, H. (2015). *Expert Rerport ER-FESTA-2015-002: Gender Issues in Recruitment, Appointment and Promotion Processes – Recommendations for a Gender Sensitive Application of Excellence Criteria*. Retrieved from http://www.festa-europa.eu/sites/festa-europa.eu/files/5.1.2.%20Gender%20Issues%20in%20Recruitment,%20Appointment%20and.pdf

Marchal, E. (2013). Uncertainties regarding applicant quality: the anonymous resume put to the test. In J. Beckert & C. Musselin (Eds.), *Constructing Quality: The Classification of Goods in Markets*. Oxford: University Press Scholarship Online.

Merton, R. K. (1973). *On social structure and science*. Chicago: University of Chicago Press.

Merriam, S. (2009). *Qualitative Research. A guide to design and implementation.* San Francisco: Jossey-Bass.

MINECON. (2012). *Career of Doctorate Holders Survey – CDH Version 2011*. Unpublished data set

MINECON. (2015). *Career of Doctorate Holders Survey – CDH Version 2014*. Unpublished data set

MINEDUC. (2018). *Compendio histórico de educación superior*. Retrieved from: http://www.mifuturo.cl/index.php/estudios/estructura-compendio

MINEDUC. (2017). *Informes personal académico 2018*. Retrieved from: http://www.mifuturo.cl/informes-personal-academico/

Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences of the United States of America, 109*(41), 16474-16479. doi:10.1073/pnas.1211286109

Musselin, C. (2009). *The market for academics*. New York: Routledge.

Muñoz-García, A. L. (2014). *Academic Mobility: The Intellectual in the Chilean academia in the context of the global economy.* (PhD in), State University of New York at Buffalo, NY: Buffalo.

Nielsen, M. W. (2015). Limits to meritocracy? Gender in academic recruitment and promotion processes. *Science and Public Policy, 43*(3), 386-399. doi:10.1093/scipol/scv052

OECD. (2016). Inequality. *Inequality.* Retrieved from http://www.oecd.org/social/inequality.htm

OECD. (2017). *Education in Chile*. Retrieved from https://doi.org/10.1787/19900198

OECD. (2019). Spending on tertiary education (indicator). doi: 10.1787/a3523185-en

OECD & The World Bank. (2009). *Reviews of National Policies for Education: Tertiary Education in Chile.* Retrieved from http://dx.doi.org/10.1787/9789264051386-en

Orellana, V. (2011). Nuevos estudiantes y tendencias emergentes en la educación superior. Una mirada al chile del mañana. In M. Jimenez & F. Lagos (Eds.), *Nueva Geografia del Sistema de Educacion Superior* (pp. 80-140). Santiago: Universidad San Sebastian.

Patton, M. (2002). *Qualitative Research and Evaluation Methods*. California: Sage Publications.

Perez Mejias, P. (2012). *School and individual factors that contribute to the achievement gap in college admissions tests in Chile.* University of Maryland, College Park, Maryland. Retrieved from http://drum.lib.umd.edu/bitstream/handle/1903/12619/PerezMejias_umd_0117E_12999.pdf

Pinto, C. (2016). Reflexiones sobre la inserción laboral de doctores en universidades chilenas. *Fronteras – Revista de Ciencias Sociales y Humanidades, 3*(1), 109-124.

Posselt, J. R. (2018). Trust networks: a new perspective on pedigree and the ambiguities of admissions. *The Review of Higher Education, 41*(4), 497-521. doi:10.1353/rhe.2018.0023

Pusser, B., & Marginson, S. (2013). University rankings in critical perspective. *The Journal of Higher Education, 84*(4), 544-568.

Reich, R. (2003). Acreditación de los posgrados en Chile. *Calidad en la Educación*, (18), 61-77. https://doi.org/10.31619/caledu.n18.386

Revista América Economía, (2010). El Mapa de las Universidades Chilenas. Retrieved from https://rankings.americaeconomia.com/2010/mejores-universidades-chile/

Revista-Qué-Pasa. (2017). Ranking de Universidades Chilenas 2017. Retrieved from

Reyes, C. (2016). Medición de la Calidad Universitaria en Chile: La influencia de los rankings. *Calidad en la Educación, 44*.

Roebken, H. (2010). Similarity attracts an analysis of recruitment decisions in academia. *Educational Management Administration & Leadership, 38*(4), 472–486. https://doi.org/10.1177/1741143210368264

Rock, J. A., & Rojas, C.. (2012). Cambios en el sistema universitario chileno: Reflexiones sobre su evolución y una propuesta de gobernanza. *Calidad en la educación*, (37), 163-188. https://dx.doi.org/10.4067/S0718-45652012000200008

Schiefelbein, E. (1996). The chilean academic profession: six policy issues. In P. G. Altbach (Ed.), *The international academic profession: Portraits of fourteen countries* (pp. 281-306). Princeton, N. J.: The Carnegie Foundation for the Advancement of Teaching.

Schwartzman, S. (1993). Policies for higher education in Latin America: The context. *The International Journal of Higher Education and Educational Planning, 25*(1), 9-20. doi:10.1007/BF01384038

Sensoy, Ö., & DiAngelo, R. (2017). "We Are All for Diversity, but . . .": How faculty hiring committees reproduce whiteness and practical suggestions for how they can change. *Harvard Educational Review, 87*(4), 557-580.

Simbürger, E., & Neary, M. (2016). Taxi Professors: Academic Labour in Chile, a Critical-Practical Response to the Politics of Worker Identity. *Workplace, 28*, 48-73.

Smith, D. G., Turner, C. S. V., Osei-Kofi, N., & Richards, S. (2004). Interrupting the usual: Successful strategies for hiring diverse faculty. *The Journal of Higher Education, 75*(2), 133-160.

Stanford. (n.d.). *Searching for candidates*. Retrieved from https://facultydevelopment.stanford.edu/recruitment/search-committee-resources/searching-candidates

University of California. (2002). *Affirmative action guidelines for recruitment and retention of faculty*. Retrieved from https://www.ucop.edu/academic-personnel-programs/_files/documents/affirmative.pdf

Véliz-Calderón, D., Theurillat, D., Paredes Walker, V., & Pickenpack, A. (2018). The evolution of the academic profession in research-centered universities in Chile. *Education Policy Analysis Archives, 26*(17).

Webber, K. L., & Canché, M. G. (2015). Not Equal for all: Gender and race differences in salary for doctoral degree recipients. *Research in Higher Education, 56*(7), 645-672. doi:10.1007/s11162-015-9369-8

Webber, K. L., & González Canché, M. (2018). Is there a gendered path to tenure? A multi-state approach to examine the academic trajectories of U.S. doctoral recipients in the sciences. *Research in Higher Education, 59*(7), 897-932. doi:10.1007/s11162-018-9492-4

Weber, M. (1966). Class, status and party: Social stratification in comparative perspective. 2nd Edition. In R. Bendix & S. Martin Lipset (Eds.), *Class, Status and Power* (pp. 21-28). New York: The Free Presss.

Williams, W. M., & Ceci, S. J. (2015). National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track. *Proceedings of the National Academy of Sciences of the United States of America, 112*(17), 5360-5365. doi:10.1073/pnas.1418878112

Youn, T. (1992). The Sociology of Academic Careers and Academic Labor Market. *Research in Labor Economics, 13*, 101-130.

Appendix

Table 4: Recommendations of Faculty Hiring according to Foreign Universities

Procedures of Faculty Hiring proposed by top-ranked universities	Harvard 2016	Stanford 2016	UC System	Different EU universities
Recruitment at the junior level faculty		x		
Review past experience concerning number of women and minority faculty in the past. Learned what happen with the minority faculty who was not recruited		x		
Description of the position				
- Broad description of the desired areas and skills	x	x	x	x
- Avoid language that suggests replacement a specific faculty	x			
- Include language that guarantee that all applicants are welcome	x	x		
- Include language that highlight diversity	x	x	x	
- Description of the position is reviewed by the school council, dean and search committee	x	x	x	
- Prioritize subfields where there is a good number of women and minority				
Search Committee				
- Transparent ways to designate faculty in search committees				
- Include faculty of diverse background within the same department	x	x	x	x
- Include faculty from outside of the department if there is not enough diversity	x	x	x	
- The chair committee should be familiar with the subfield of the discipline	x			
- Avoid appointing the faculty member with the most at stake as chair of the committee.		x		x
Setting the Ground Rules				
- Consensus or Votes in the committee	x			
- Confidentiality	x			
- Keep records of the information	x			
- Dealing with power dynamics among faculty to evaluate faculty	x			
Search Plan				
- Written search plan: Identify the list of the places and contacts where the job call announcement will be disseminated	x	x	x	
- Spread out the job announcements as much as possible, particularly among scholars and young research you do not know yet	x	x	x	x

- Advertise the position in publications that target candidates from minority backgrounds	x	x	x	
- Actively Recruit Candidates who represent a diverse background by emailing your colleagues for candidates' recommendations	x	x	x	
- Guarantee that potential candidates mentioned earlier include women and minorities. Monitor the representation of faculty from diverse background in the pool	x	x	x	
- Avoid making assumptions about candidates' availability	x	x		
- Review resources for applicants with disabilities	x			
- Consult relevant candidate databases updated and sourced by the Vice Provost for Faculty Development and Diversity	x	x (how they selected this pool, which are the candidates)		
- In case of identifying a truly exceptional candidate that enriches faculty, a search waiver may be requested from the provost	x	x		
Recognize unconscious bias				x
- Talk openly how hiring criteria may be affecting the participation of under-represented faculty	x			
- Take an implicit association test	x	x		
- Be especially vigilant about statements concerning "fit."	x			
- Get familiar with literature about conscious and unconscious bias		x		x
Develop Evaluation Criteria	x			
Evaluate criteria considering past accomplishment and future trajectory	x			x
- Committee members must commit to thoroughly reviewing each assigned dossier	x	x	x	
- Avoid short cuts since these may introduce unconscious bias (ranking of university)	x			
- Applications should be read by more than one person		x	x	
- Scrutinize how hiring criteria may introduce a conscious or unconscious bias				
Identifying the "Long List" of Credible Candidates				
- All ratings should be shared—in advance of the meeting—with the committee chair	x			
- The chair should examine the ratings to determine if some committee members assign consistently higher or lower ratings to all applicants	x			
- The chair should bring forward female or minority applicants who might deserve a "second look." Pay special attention to individuals just below the "long list" cutoff	x	x	x	
Identifying the "Short List" of Candidates to be Interviewed				
- Taking into consideration the list of criteria defined, discuss the short list of applicants that each committee member selected	x			
- Have someone external to the committee—preferably from the Dean's Office—to review the "short list" before official invitations to visit are extended.	x			

Questionnaire 1: Protocol for Faculty Participating in the Process of Faculty Hiring

1. **Considering the last time that your department hired a new faculty member to fill a tenure-track position, please tell me a little bit about your departmental hiring process.**

2. **How does your department go about deciding the specifications for a new faculty position?**

3. **Could you please explain how you go about establishing the selection criteria for inviting a candidate to come for an interview?**

4. **If you are able to decide on a list of criteria to consider for hiring a new faculty member, which criteria would you propose? Please tell me about the hierarchical order of those criteria.**

5. **Considering your experience in hiring faculty, for example, how many applications did your department receive for its last job opening?** How many applicants met the requirements listed in the job posting?

6. **Considering your experience in search committees, please walk me through the process to determine the short list of applicants.**

7. **From your experience, how difficult or easy is it to reach agreement among the members of a search committee in determining the short list of applicants? What are the aspects that committee members normally agree on quite easily, and what are aspects that normally require in depth discussions?**

   Potential follow up questions: Considering your experience with faculty recruitment, do you remember any process where the search committee disagreed on the selected candidate? If so, would you mind explaining how you solved this conflict?

8. **Considering the literature on faculty hiring both in Europe and the USA, the candidate's personality and how it fits into the department is important. Do you consider such a criterion? And if so, what would this mean?**

9. **Have you experienced a situation where the committee's readings of a candidate's CV did not match with what you saw in the interview? If so, what was this experience?**

10. **In a hypothetical situation where you have two applicants who have expertise in the same area of knowledge, and both have two research articles in a leading ISI journal, which additional criteria would you use to distinguish between them?**

11. **Please imagine that a sample of recently graduated PhD holders have an average of two articles in a leading ISI journal. Imagine that these people are looking for faculty jobs at engineering/economics departments. What types of strategies would you suggest that they use to secure jobs? Which types of information would you encourage them to include in their CVs?**

12. **Now, thinking about your personal experience, would you mind talking about the process when you were hired for this job?**

13. **How did you decide that you wanted to work in academia?**

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

SEEKING FACULTY JOBS: EXPLORING THE RELATIONSHIP BETWEEN SOCIAL CLASS OF ORIGIN AND HIRING NETWORKS IN CHILEAN ACADEMIA

This study is the third of three dissertation papers on the effects of social class of origin on the careers of faculty in Chile. A version of this paper was presented in the conference Postgraduate Supervision: The Global Scholar, March 29, 2019. Stellenbosch, South Africa.

Roxana Chiappa, rchiappa@uw.edu

Abstract

Based on a qualitative case study, this article explores how Chilean early-career doctorate holders in engineering find positions as assistant professors, paying special attention to the role of their social class of origin and the use of their networks. Findings show that social class of origin mediates the academic network configuration of faculty-job seekers through unequal opportunities for attending prestigious Chilean undergraduate universities, and subsequently, the unequal opportunities of studying for a doctorate degree at top-ranked foreign universities. Only upper social class candidates who received their doctorate degrees from top foreign universities were capable of securing positions at the top research-intensive Chilean universities. Yet, findings also show that these conditions – upper class and foreign PhD credentials – do not guarantee a faculty position, unless faculty job seekers have ties with professors who were involved in hiring decisions and/or candidates demonstrate exceptional research productivity.

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. Individuals 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 and Kim, 2018; for the USA, see Burris, 2004; Clauset, Abersman, and Larremore, 2015; et al., 2015; Hadani, Coombes, Das, and Jalajas, 2012; Headworth & Freese, 2016; for France, Germany, and the USA, see Musselin, 2010; for South Africa, see Cowan and Rossello, 2018).

Whether academic departments prefer applicants 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). In any case, 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/sorting 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 are strongly associated with the social class of origin of individuals (For the USA, see Crane, 1969; González-Canché 2017; Ostrove, Stewart, and Curtin, 2011; for Chile, Perez Mejias, Chiappa; and Guzman-

Valenzuela, 2018). Yet, 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 and Gross, 2013; Oldfield and 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, are still underexplored (Chiappa and Perez Mejias, 2019; Oldfield and Conant, 2001).

In this paper, I contribute to filling this knowledge gap through a qualitative study that analyzes how Chilean doctorate holders in engineering, from different social classes, successfully secured tenure-track faculty positions at Chilean universities, by paying special attention to the role of their networks in securing their positions. 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? b) To what extent did social class of origin influence the ways in which doctorate holders developed and used their networks to find their current jobs?

Chile is an interesting case to study because this country is experiencing a rapid increase in doctorate graduates competing for faculty 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 for doctorate degrees in Chilean and foreign universities (CONICYT, 2018), achieving one of the highest proportions of doctorate holders per inhabitant in the Latin American region (RICYT, n.d.). Furthermore, the rapid increase in government-sponsored doctoral fellowships has also augmented the number of PhDs from working class backgrounds, as compared with past generations of doctorate holders in Chile (MINECON, 2012).

An analysis of how doctorate holders from different social classes find faculty jobs is also particularly relevant in the Chilean context due to the country's high level of income inequality: the richest 10% of the population earns 25 times more than the poorest 10% (OECD, n.d.). This

high level of income inequality is reflected in all domains of the country's social life (PNUD, 2017), especially in the educational system. Potentially, this level of income inequality could also be affecting the possibilities of early-career doctorate holders finding a job in the Chilean labor market as will be explained below.

Chile's Social, Educational, and Higher Educational Policy Context

Chile's Inequality is Reflected in its Education System

Chile has the highest level of income per capita per year (PPP USD$27,963) (INE, 2018) and the second lowest levels of poverty (8% of the population lives with less than US$ 4 per day) in the Latin American region (The World Bank, n.d.a), but 50% of its population earn less than PPP USD 18,000 a year (INE, 2018).

This level of income inequality is reflected in an education system that is highly stratified by social class (Mizala and Torche, 2012; OECD, 2013). At the primary and secondary levels, Chilean students are distributed into three types of schools: (1) private schools, privately owned with expensive tuition; (2) subsidized schools, privately administered and publicly funded; (3) public schools, state owned and publicly funded (MINEDUC, 2013). The capacity of parents to pay for schooling is intrinsically associated with the family socioeconomic status of students (MINEDUC, 2013). In fact, Mizala and Torche (2012) estimate that more than 90% of students at private schools come from the two wealthiest income deciles; students at subsidized schools come from middle income families, whereas more than two-thirds of the students at public high schools come from the bottom half of the income distribution (Mizala and Torche, 2012).

This degree of stratification is subsequently reproduced at the tertiary level, primarily manifested in the unequal opportunities that students from different types of high schools have in succeeding in the national college admission test (PSU); the results of which are crucial for

admission to the universities with greater academic quality (Canales, 2016; Orellana, 2011; Pérez-Mejias, 2012). By 2017, undergraduate students who attended public and subsidized high schools accounted for 32% and 52% of the total undergraduate enrollment, respectively, but they were over-represented in open-access universities with low academic quality and vocational colleges that do not require minimum scores in the PSU test. In contrast private high school students represented 16% of the undergraduate enrollment but were concentrated in the few highly selective universities with high academic quality (MINEDUC, 2018).

For the specific case of graduate education in Chile, there is no comprehensive study that examines the socioeconomic composition of doctorate students; but the existing sources suggest that more than half of the doctoral students enrolled in Chilean universities come from families whose parents have college degrees or studied at private high schools (MECESUP, 2014; MINEDUC, 2018). Looking specifically at the group of individuals who applied for foreign postgraduate fellowships, another study reveals that individuals from private high schools are not only the majority of the applicants, but are also more likely to obtain one of the foreign doctorate fellowships sponsored by the Chilean government, as compared with their peers who studied in public and subsidized high schools (Perez Mejias, Chiappa, and Guzmán-Valenzuela, 2018).

Accreditation and University Rankings as Indicators of the Prestige of Chilean Universities

The academic quality of higher education institutions is measured by formal accreditation processes, overseen by the National Accreditation Commission (CNA). To pass accreditation, universities have to certify their academic quality in undergraduate teaching and institutional administration for at least two years (with a maximum of seven years). Universities can also voluntarily certify their research capacity, postgraduate education, and extension (CNA, n.d.). The greater number of years and areas accredited, the greater the academic quality. Out of the the 61

existing universities in the country, 43 of them are currently accredited for at least two years in the teaching and institutional administration areas; 25 are accredited in the research area for three or more years, and only three universities were granted seven years in all areas, which is the maximum status of accreditation than any university can get in Chile (CNA, n.d.).

Additionally, Chilean universities are not exempt from the pressures of national and international university rankings, today considered one of the main devices that reflect university prestige (Altbach, 2016; Pusser and Marginson, 2013). A comparison between Chilean university accreditation and rankings shows that most of the universities with high levels of accreditation (six to seven years in all five areas) are highly ranked in Chilean university rankings (Ranking Qué Pasa, Ranking America Economía) (see Table 1), but not in international league tables. According to one the most renowned international university rankings – the Shanghai Jia Tong (Altbach, 2016) – the University of Chile and the Catholic University of Chile are the only Chilean universities that appear among the top 500 world-class universities (ARWU, 2018).

Factors that Influence the Chances of Securing a Faculty Job

Academic units at research-intensive universities in Chile are increasingly searching for faculty candidates who obtained their doctorate degrees from top-ranked foreign universities (Bernasconi, 2010; Celis and Veliz, 2017). Chilean scholars argue that this practice partially responds to new government funding schemes that reward research productivity, the greater number of Chilean doctorate holders graduated from foreign universities and sponsored by government fellowships, and the increasing relevance of university rankings that sort universities on scales of prestige (Bernasconi, 2010; Celis and Veliz, 2017; Celis and Kim, 2018).

Looking specifically at industrial engineering academic departments at Chilean research-intensive universities (six to seven years accredited), Celis and Kim (2018) found that these

academic units are preferentially recruiting doctorate holders who graduated from top-ranked foreign universities as a strategy for connecting with international academic networks and accessing resources available in other countries (Celis and Kim, 2018).

From the perspective of academic job-seekers in different disciplines, Pinto (2016) found that foreign PhD credentials did not guarantee an academic position in themselves, but rather operated as a differentiation mechanism among candidates when minimum standards of scientific productivity were met (number of publications, research grants). Furthermore, Pinto (2016) found that the possibilities of successfully accessing Chilean academia were heavily reliant on the prior career path of doctorate holders, and consequently, the links that they were able to forge with Chilean academics.

Specifically, Pinto found three types of academic-job seekers: (1) those who studied their doctorate degrees in Chile or abroad, but have always wanted to become professors, maintained their network with th Chilean academia, and heavily relied on their academic ties to find their current positions; (2) those who already held a faculty position when they started their doctorate degree; and (3) those who decided to complete a doctorate degree outside of Chile, because it represented an opportunity for improving their job prospects, albeit without connections within Chilean universities. Among the three types of faculty job seekers, this latter group of doctorate holders were the ones who found it most challenging to find academic jobs in Chile (Pinto, 2016).

Pinto’s study focuses on the professional trajectories of doctorate holders and how they influence their chances of securing a faculty job, but her analysis pays little attention to the variable of social class of faculty job seekers. Likewise, Pinto's classification of PhD-granting universities is based on geographic location, but not on the level of reputation of these institutions.

Discarding the social class variable from the analysis of how doctorate holders find academic jobs is somewhat problematic, due to the high level of stratification of the Chilean higher education system (PNUD, 2017) and the important role of university prestige to predict faculty job placement (Clauset et al., 2015). Indeed, the first article of this dissertation reveals that social class of origin has indirect effects on faculty income due to the unequal opportunities of faculty members for accessing undergraduate universities with high research capacities, and consequently, top-ranked prestigious PhD-granting universities. The prestige of their PhD granting university, in particular, is one of the main predictors of faculty income (Chiappa and Perez Mejias 2019). Further, when the quality of undergraduate and PhD-granting universities and all other relevant variables associated with faculty working conditions are equivalent, faculty members from the lowest social class group still report lower levels of income compared to their upper social class peers. This finding shows that there is a direct effect of social class of origin on faculty income, and rises the hypothesis that practices of faculty hiring might not be exempt from the generalized classism of Chilean society. It hypothesizes that academic units that control the access to highly-paid academic jobs might have hiring processes that consciously or unconsciously exclude individuals from the lowest social class, even when members of this group could have completed undergraduate and doctorate degrees at equally prestigious universities as their peers from upper social class backgrounds. Yet, the data used for the salary analysis did not have information about the specific employers nor the description of faculty positions to prove this statement (Chiappa and Perez Mejias 2019).

This inquiry partially contributes to unpacking what mechanisms are of social class reproduction that might be sorting individuals from different social class to specific positions and universities in Chilean academia.

Conceptual Framework

I incorporate three theoretical perspectives —social and cultural reproduction (Bourdieu, 1983, 1987, 1988; Bourdieu and Passeron, 1977), human capital (Becker, 1967; Mincer, 1984; Schultz, 1970), and network theory (Burt, 2000; Granovetter, 1973; Lin, 2001)- to analyze how doctorate holders from different social class groups use 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 and 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 the 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 level of 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 (Pazstor and Wakeling, 2018), their networks (social capital) with reputed academics, and their scientific productivity, typically measured in publications and grants received (Pinto, 2016).

From a different standpoint, human capital scholars (Becker, 1967; Mincer, 1984; Schultz, 1970) stress the role of education as an enabler that allows individuals from all social class groups to achieve the skills, knowledge, and networks to successfully compete in the labor market. According to this conceptual framework, doctorate holders in this study 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 their 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 would 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) posit 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 the members of their networks (Lin, 2001). Similar to what the tenets of social and cultural reproduction propose, network theory proponents recognize that the power and resources that individuals access are strongly associated with the social status that they have in society. But the total value of the network is not only measured by the accumulated amount of resources that network members have but also in the diversity of resources that a network's members bring and the types of ties that connect members' networks (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, compared to their colleagues who lack these connections.

Methodology

This study consists of a qualitative case study on *how* early career doctorate holders from different *social classes of origin* find their faculty jobs in Chile 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 faculty hiring at Chilean universities with different levels of prestige. For this article, I selected doctorate holders in engineering who had completed their doctorate degrees within the last five years, mainly because engineering is considered one of the key fields in the scientific and technological agenda of the Chilean government (CNIC, 2006). Out of the more than 10,000 doctorate holders living in Chile by the end of 2011, it is estimated that approximately 17% held a doctorate degree in engineering (MINECON, 2015)

Sampling Strategies

A two-step sampling strategy approach selected the institutions in which participants of this study are currently working. I first identified universities that had a campus in the metropolitan region around Santiago; had certified their institutional research capacity in the accreditation

process, had academic departments in engineering, and had hired faculty within the last five years. Within each university selected, the sample for this study consisted of Chilean-born faculty who were working in tenure-track positions in industrial engineering departments (N=35), who had completed their doctorate degrees within the last five years, and who were under 40 years of age (N=16). An invitation was sent to all faculty in the selected departments who met these criteria by January 2017, and I received nine responses from faculty working at three universities.

To increase the diversity of voices, I included one additional participant who graduated with a PhD in engineering, and who was working in a tenure-track position at a highly accredited university located outside the metropolitan region. Table 1 summarizes the general institutional characteristics of Chilean universities where sample participants are currently employed.

Table 1: List of Universities Where Faculty Are Currently Employed

University Names	Geographic location	Years of accreditation	University Positioning as described by Chilean Rankings/ Shanghai Jia Tong Ranking	Undergraduate Enrollment in 2018	Percentage of Undergrad. Enrollment from Private High Schools	Number of Faculty in the sample working at the university
University of the North	Metropolitan Area	6-7	Top 3/ Top 500	More than 20,000	40%-60%	3
University of the East	Metropolitan Area	5-6	Top 6/ Non-Ranked	More th an 20,000	Less than 20%	2

University of the Rivers	Central Region	5-6	Top 9/ Non-Ranked	More than 10,000	20%-40%	1
University of the West	Metropolitan Region	4-5	Top 12/ Non-Ranked	More than 30,000	20%-40%	4

It is worth mentioning that no women were included in the early-career faculty sample, mainly because the few women working in the selected departments did not meet the eligibility criteria; this is partially a reflection of the lack of female representation in the engineering field in Chile (Berríos, 2007).

Data

For this article, the data analyzed consists of semi-structured, face-to-face, taped interviews conducted by the author between January and April 2017, as well as reviews of the CVs of the participants and of memos of observational notes written up by the author 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—Questionnaire 1). Each interview lasted from 45 to 75 minutes, was conducted in Spanish, recorded, and transcribed verbatim. Analysis was conducted 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, I first coded the interviews with each one of the participants 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.

I then developed a list of salient themes across all the interviews of the participants. I grouped this list into four themes associated with the factors and actors influencing the educational and professional choices of participants. These themes are: (1) choice of undergraduate field of study and undergraduate university; (2) decision to undertake a doctorate degree; (3) selection of PhD-granting university; and (4) the process of finding a faculty job. This phase of coding ensured that I analyzed all interviews 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 early-career faculty in Chilean academia found their current faculty jobs and the role their academic networks played in securing an academic job. It considers only cases of doctorate holders who found a position as assistant professors at universities with research capacity in Chile. Second, it only considers individuals 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 achieve a very detailed description and understanding of the role of the social class of origin in the educational and professional careers of faculty. I aimed 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 only to adapt the questions of the protocol, citing the specific dates on which participants started their undergraduate an doctorate programs, but also generated 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 with different degrees of detail to the economic and social resources they were exposed to along their educational pipeline. 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 the first article of this dissertation (Chiappa and Perez Mejias, 2019), I used these three data points to capture participants' economic, social, and cultural capital, respectively. I classified the participants into three social class groups. Participants in the upper social class group (N=5) had parents with at least a college degree, attended private high schools, and had learned a second language during high school. Acquisition of a second language in Chile

is highly associated with having attended private high school (MINEDUC, 2015) and access to international travelling experiences. 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, 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, which indicates a certain degree of academic wealth. Table 2 summarizes the participants' social classes of origin. 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.

Table 2: Characterization of Participants in the Sample

Participant's Names	**Social Class of Origin Assigned**	**Variables of Social Class**		
		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 univerity 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

Findings

All participants in this sample represent a selective group of doctorate holders in Chile. They had published at least one article in a peer-reviewed journal at the moment of completing their doctorate degrees and were able to secure a position as assistant professors at industrial

engineering academic departments linked to universities with accredited research capacity (five to seven years) within a period of two years after finishing their doctorate degree.

The findings, summarized in Table 3, show that participants in this sample 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 shows 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. Nonetheless, the social class of origin of participants appears to have determined the level of prestige of the universities where they ended up being hired.

In what follows, the findings section is organized in three parts. The first section analyzes how the association between social class of origin and the undergraduate university attended impacts the selection of a doctorate program, as well as the academic job search. The second part describes the importance of generating strong ties with professors who are knowledgeable of or involved in faculty hiring decisions. The third part discusses 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 key 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) 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) and Omar (low) capture the mechanisms through which social class of origin gets reproduced via unequal access to information and resources.

Gonzalo (upper) 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 attended foreign universities for a graduate education. 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 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 in his undergraduate program 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 doctorate 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 academics 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 it 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 by the resources that he found 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

Strong ties with professors who are involved in or knowledgeable about faculty hiring processes seemed to have been very important for securing faculty positions. Findings show that participants who come from low- 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 privileged information about faculty hiring processes or directly participated in faculty hiring, which provided participants from low- and middle-class groups advantageous access during the hiring processes. As Table 3 shows, all participants in this sample 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), who studied his undergraduate program at a regional university, is the only participant who openly said that he comes from a rich family and whose father was a university professor. Contrary to the other participants in the sample, 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.

According to Antonio, he could study for his doctorate degree in Germany without the support of his undergraduate supervisor, which curtailed his chances of applying for a government

fellowship, 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 Germany, 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 his several 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 who could have influential positions in faculty hiring processes.

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 seek academic jobs 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 the University of the West 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.

Strong ties, PhD in Foreign Countries, Competitive Grants

The participants in this sample who earned their doctorate degrees in Chile – Gino (upper), Carlos (middle), Gabriel (low) – inevitably developed strong ties with professors and colleagues working at the most reputed 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 matter. Academic departments at research-intensive universities do not hire their PhD-alumni, but rather PhD holders who studied at prestigious foreign universities.

This is the case with Gino (upper), who after finishing his undergraduate degree in a regional university decided to complete his doctorate degree in Santiago. He explains, "The world expert in my area was working in Chile, so I thought there would be no substantial difference between studying in Chile and in the USA". He picked one of the most reputed PhD programs in the country, at a university with high research capacity. While he was completing his doctorate degree, he learned that his academic department did not hire its doctorate alumni, but rather candidates who completed doctorate degrees at foreign, highly ranked universities. Advised by his own doctoral adviser, Gino took one extra semester to complete his doctorate degree in order to secure an adequate number of publications before starting to submit job applications at Chilean universities. He submitted applications to three faculty job positions at Chilean universities with lower research capacities than his PhD-granting university, and he got job offers from two of them. He picked the University of the West where he already had networks.

On the other hand, the participants who studied abroad and did not secure a faculty job before finishing their doctorate degrees, all of whom were upper class, had lost contact with their

networks in Chile. With the exception of Antonio, they purposely sought to reconnect with their undergraduate supervisors. As Alan (upper) explained, one year before finishing his doctorate degree, “I came to Chile and volunteered to give talks at several Chilean universities where I had contacts.” He knew “how competitive the process was, so I needed to reconnect with my past networks.” Alan applied to around five faculty job positions only in Chile, partially because his romantic partner wanted him to come back to Chile, and partially because he had obtained a government fellowship which required him to come back.

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. He completed his undergraduate program at the university that had the lowest level of accreditation within the sample, but his was able to connect with a professor there who had recently finished his doctorate degree in Spain. This professor became Francisco’s undergraduate thesis supervisor and served as a bridge to connect Francisco with reputed Spanish universities where he had contacts. Francisco was admitted to a master’s degree program, and while there, he decided to pursue a doctorate degree. 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 Francisco to fund his own research agenda. Once his results were published, Francisco received several job offers enabling him to negotiate a contract as an assistant professor. He picked the university with the greatest research capacity in his area, which also was the most prestigious one.

Francisco is the only individual in the sample who was able to get hired at a more prestigious university than his undergraduate university. He acknowledges that, without his

postdoctoral grant and a credential from a foreign university, he likely would not have gotten 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 journals and if you know the right people, that can make a difference”.

Table 3: Academic Ties That Helped Early Career Faculty Find Their First Job, and Self-perception Regarding the Importance of Networks

Name	Social Class 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 50, 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 50, USA	PhD adviser. Colleague met in the doctorate program. Professors from his UG degree Professor working at his former employer	6	USA: 6 tenure-track positions; Chile: 1 tenure-track university; had 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
Mario	Upper Gov. Fellow + PhD Univ. Funding	UG: Top 500, Santiago, Chile PhD: Top 50, 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.

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	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	Pre-hire agreement with his former undergraduate academic department before starting the PhD
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 jobs.
Carlos	Middle Gov. Fellow + Additional part-time teaching jobs	UG: Non-ranked, Central Region, Chile PhD: Non-ranked, Met Area, 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.	They actively were seeking a tenure-track faculty job	PhD-supervisor notified him of a position available at the university where his supervisor had been recently hired

Gino	Upper Gov. Fellow + PhD Univ. projects	UG: Non-ranked, Southern Region, Chile PhD: Top 500, Met Area, 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, Region South, Chile PhD: Top 500, Santiago, 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.
Francisco	Middle Univ. fellowship from the first year	UG: Non-ranked, Central Region x, Chile PhD: Non-ranked, Spain	PhD supervisor, colleagues from doctorate program Professors from his UG degree.	4	No official need to apply. Europe: 3 post-doc 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 post-doc grant funded by the Chilean government while he was finishing his first post-doc in Europe. This allowed him to negotiate a faculty tenure-track position with his Chilean postdoc institution

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

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

Discussion

This study aimed to acquire a deeper understanding of *how* early career doctorate holders 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 and Kim, 2018; Hadani et al., 2015). 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 and Passeron, 1977) and other prior studies show (Chiappa and Perez Mejias, 2019), the economic, social, and cultural assets inherited from one's family translate first into unequal access to selective and research-intensive universities at the undergraduate level. Then, 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 conditioned the 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 even rely on their family wealth to fund part of their doctorate degrees at a foreign university. This is the experience of Antonio (upper), who was the only participant in the sample 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 and Kim, 2018, Celis and Veliz, 2017). In line with what other analysis shows on the relationship between social class of origin and prestige of one's PhD-granting university (Perez Mejias et al., 2019), upper social class participants in this study went to better ranked PhD-granted universities as compared with their low- and middle-class peers. The qualitative methodology used in this study does not allow for generalizations, but this evidence is consistent with the first article of this dissertation that shows that class of origin is positively associated with the level of prestige of PhD-granting universities attended (Chiappa and Perez Mejias, 2019)

Furthermore, social class of origin particularly matters in the process of securing a faculty job because participants who studied abroad intentionally reconnect with the professors and colleagues they met during their undergraduate programs, who are likely to be more valuable contacts when they are located at higher quality universities.

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. There are two main elements that explain this inbreeding pattern. First, one of the universities in the sample created plans to pre-hire their undergraduate alumni who are currently enrolled in doctorate degree programs, in order to guarantee their supply of faculty with PhD credentials from foreign universities. Second, participants describe 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 had a greater number of connections and opportunities linked to academia in which they could rely on beyond their former doctoral advisors and colleagues.

Indeed, the participants' stories demonstrate that neither upper social class status nor a PhD credential from a foreign university guarantees a faculty job at a top-research intensive university, if the candidate did not establish strong connections with the professors who had an important role in the faculty hiring process. 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 participant (Antonio) who studied abroad and did not have strong ties to professors who have important positions in the hiring network, took longer to find a tenure track faculty position.

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, the participant 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 (Francisco), albeit still not among the top research-intensive universities in Chile.

Overall, these findings suggest that the process of faculty recruitment at academic departments with prestige 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. 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 should review the importance of strong ties with influential professors in obtaining a tenure-track faculty position in Chilean academia, considering

applicants' productivity levels, prestige of PhD and undergraduate university attended, disciplinary field, gender, and class. Specifically drawing from the findings reported here, future studies should 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.

References

Altbach, P. (2016). The globalization of rankings. In P. Altbach (Ed.), *Global perspective in higher education* (pp. 130-139). Baltimore: John Hopkins.

ARWU. (2018). Academic ranking of world class universities 2018. Retrieved from http://www.shanghairanking.com/ARWU2018.html

Bernasconi, A. (2008). La Profesionalización de la academia en Chile. *Calidad en la Educación*(28), 15. doi:10.31619/caledu.n28.199

Bernasconi, A. (2010). La apoteosis del investigador y la institucionalización de la profesión académica en Chile. Estudios Sobre Educación (19), 139-163.

Becker, G. S. (1967). *Human capital and the personal distribution of income; an analytical approach*. Ann Arbor: Institute of Public Administration.

Berríos, P. (2007). El sistema de prestigio en las universidades y el rol que ocupan las mujeres en el mundo académico. *Calidad en la Educación*, 349-361.

Bourdieu, P. (1983). The field of cultural production, or the economic world reversed. *Poetics, 12*(4-5), 311-356. doi:10.1016/0304-422x(83)90012-8

Bourdieu, P. (1987). What makes a social class? On the theoretical and practical existence of groups. *Berkeley Journal of Sociology, 32*, 1-17.

Bourdieu, P. (1988). *Homo academicus*. Cambridge: Polity Press in association with Basil Blackwell.

Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society and culture*. London/Beverly Hills: Sage Publications.

Burt, R. S. (2000). The network structure of social capital. *Research in Organizational Behavior, 22*(C), 345-423. doi:10.1016/S0191-3085(00)22009-1

Burris, V. (2004). The academic caste system: Prestige hierarchies in PhD exchange networks. *American Sociological Review, 69*(2), 239-264.

Canales, A. (2016). Diferencias socioeconómicas en la decisión de postular a las universidades chilenas: el rol de las expectativas educativas, preparación académica y decisiones educativas de los postulantes. Revista Calidad en la Educación, 44, 129-157.http://dx.doi.org/10.4067/S0718-45652016000100006

Celis, S. y Véliz, D. (2017). La acreditación como agente de mejora continua en los programas de postgrado en ciencia y tecnología (Vol. N°5). Santiago de Chile: Comisión Nacional de Acreditación. Serie Cuadernos de Investigación en Aseguramiento de la Calidad.Disponible en la red: http://www.investigacion.cnachile.cl/

Celis, S., & Kim, J. (2018). The making of homophilic networks in international research collaborations: A global perspective from Chilean and Korean engineering. *Research Policy, 47*(3), 573-582. Retrieved from <Go to ISI>://WOS:000427664000003. doi:10.1016/j.respol.2018.01.001

Chiappa, R. & Perez Mejias, P. (2019). Unfolding the direct and indirect effects of social class of origin on faculty income. *Higher Education. https://doi.org/10.1007/s10734-019-0356-4*

Clauset, A., Arbesman, S., & Larremore, D. B. (2015). Systematic inequality and hierarchy in faculty hiring networks. *Science Advances, 1*(1). doi:10.1126/sciadv.1400005

CNIC. (2006). *Informe Final: Consejo Nacional de Innovación para la Competitividad. Asesor del Presidente de la República*. CNIC: Santiago

CONICYT. (2018). Becarios Programa Formación de Capital Humano Avanzado. Retrieved from https://app.powerbi.com/view?r=eyJrIjoiMjFiZjBhOWMtMmI5ZS00NzVkLWIwNGMtNjhjOTAxYTUzYjY5IiwidCI6ImU3M2FmMWRlLWU5ZTYtNGM0OS1iMWUxLWZjNjg3ZjM2MjY0NyIsImMiOjR9

Cowan, R., & Rossello, G. (2018). Emergent structures in faculty hiring networks, and the effects of mobility on academic performance. *An International Journal for all Quantitative Aspects of the Science of Science, Communication in Science and Science Policy, 117*(1), 527-562. doi:10.1007/s11192-018-2858-8

Crane, D. (1969). Social class origin and academic success: The influence of two stratification systems on academic careers. *Sociology of Education, 42*(1), 1-17. doi:10.2307/2111805

González-Canché, M. S. (2017). Community college scientists and salary gap: Navigating socioeconomic and academic stratification in the U.S. higher education system. *The Journal of Higher Education, 88*(1), 1-32. doi:10.1080/00221546.2016.1243933

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology, 78*(6), 1360-1380. doi:10.1086/225469

Granovetter, M. (1995). *Getting a job. A study of contacts and careers*. Chicago: University Press

Hadani, M., Coombes, S., Das, D., & Jalajas, D. (2012). Finding a good job: Academic network centrality and early occupational outcomes in management academia. *Journal of Organizational Behavior, 33*(5), 723-739. doi:10.1002/job.788

Headworth, S., & Freese, J. (2016). Credential privilege or cumulative advantage? Prestige, productivity, and placement in the academic sociology job market. *Social Forces, 94*(3), 1257-1282. doi:10.1093/sf/sov102

Husu L. (2000). Gender discrimination in the promised land of gender equality. *Higher Education in Europe*, 25: 221–8.

INE. (2018). *Nueva encuesta suplementaria de ingresos 2017*. Retrieved from Santiago: https://www.ine.cl/docs/default-source/ingresos-y-gastos/esi/ingreso-de-hogares-y-personas/resultados/2017/sintesis_esi_2017_nacional.pdf

Lang, D. (1984). Education, stratification, and the academic hierarchy. *Research in Higher Education, 21*(3), 329-352. doi:10.1007/bf00974866

Lin, N. (2001). *Social capital. A theory of social structure and action*. Cambridge: Cambridge University Press.

MECESUP. (2014). *Estudio evaluativo de un conjunto de programas doctorales chilenos*. Unpublished work.

Merriam, S. (2009). *Qualitative Research. A guide to design and implementation.* San Francisco: Jossey-Bass.

Mincer, J. (1984). Human capital and economic growth. *Economics of Education Review*, 3(3), 195–205. https://doi.org/10.1016/0272-7757(84)90032-3.

MINECON. *Career of doctorate holders survey Version 2011 - CDH*. Unpublished Data Set.

MINECON. (2015). Presentación Principales Resultados Proyecto CDH, año referencia 2011. Retrieved from http://www.economia.gob.cl/wp-content/uploads/2015/01/Presentaci%C3%B3n-principales-resultados-CDH.pdf

MINEDUC. (2013). Metodología de construcción de grupos socioeconómicos SIMCE. Retrieved from https://s3.amazonaws.com/archivos.agenciaeducacion.cl/documentos-web/Metodologia_de_Construccion_de_Grupos_Socioeconomicos_Simce_2013.pdf

MINEDUC. (2015). *SIMCE Inglés | Resultados de educación media 2014*. Retrieved from Santiago: http://archivos.agenciaeducacion.cl/resultados-2014/Sintesis_Resultados_IIIM_2014.pdf

MINEDUC. (2018). *Base matrícula histórica 2007-2018*. Retrieved from: http://www.mifuturo.cl/index.php/bases-de-datos/matriculados

Mizala, A., & Torche, F. (2012). Bringing the schools back in: The stratification of educational achievement in the Chilean voucher system. *International Journal of Educational Development, 32*. doi:10.1016/j.ijedudev.2010.09.004

Musselin, C. (2009). *The market for academics*. New York: Routledge.

Nielsen, M. W. (2015). Limits to meritocracy? Gender in academic recruitment and promotion processes. *Science and Public Policy, 43*(3), 386-399. doi:10.1093/scipol/scv052

Oldfield, K., & Conant, R. F. (2001). Professors, social class, and affirmative action: A pilot study. *Journal of Public Affairs Education, 7*(3), 171-185. doi:10.1080/15236803.2001.12023512

OECD. (2016). *Inequality*. Retrieved fromhttp://www.oecd.org/social/inequality.htm

OECD. (2013). Education Policy Outlook Chile. Retrieved from http://www.oecd.org/edu/EDUCATION%20POLICY%20OUTLOOK%20CHILE_EN.pdf

OECD. (2018). *Level of GDP per Capita and Productivity.* Retrieved from https://stats.oecd.org/index.aspx?DataSetCode=PDB_LV.

Orellana, V. (2011). Nuevos estudiantes y tendencias emergentes en la educación superior. Una mirada al Chile del mañana. In M.Jiménez F. Lagos(Eds.), *Nueva Geografía del Sistema de Educación Superior* (pp.80– 140). Santiago: USS

Ostrove, J. M., Stewart, A. J., & Curtin, N. L. (2011). Social class and belonging: Implications for graduate students' career aspirations. *The Journal of Higher Education, 82*(6), 748-774.

Patton, M. (2002). *Qualitative Research and Evaluation Methods*. California: Sage Publications.

Pásztor, A., & Wakeling, P. (2018). All PhDs are equal but … Institutional and social stratification in access to the doctorate. *British Journal of Sociology of Education, 39*(7), 982-997. doi:10.1080/01425692.2018.1434407

Perez Mejias, P. (2012). *School and individual factors that contribute to the achievement gap in college admissions tests in Chile* (Doctoral Dissertation). University of Maryland, College Park, Maryland. Retrieved from http://drum.lib.umd.edu/bitstream/handle/1903/12619/PerezMejias_umd_0117E_12999.pdf

Perez Mejias. P., Chiappa, R., & Guzmán-Valenzuela, C. (2018). Privileging the privileged: The effects of international university rankings on a Chilean fellowship program for graduate studies abroad. *Social Sciences, 7*(12), doi:10.3390/socsci7120243

Pinto, C. (2016). Reflexiones sobre la inserción laboral de doctores en universidades chilenas. *FRONTERAS – Revista de Ciencias Sociales y Humanidades, 3*(1), 109-124.

Posselt, J. R. (2018). Trust networks: A new perspective on pedigree and the ambiguities of admissions. *The Review of Higher Education, 41*(4), 497-521. doi:10.1353/rhe.2018.0023

Pusser, B., & Marginson, S. (2013). University rankings in critical perspective. *The Journal of Higher Education, 84*(4), 544-568.

PNUD. (2017). *Desiguales. Orígenes, cambios y desafíos de la brecha social en Chile*. Retrieved from Santiago: https://docs.google.com/viewerng/viewer?url=http://www.adnradio.cl/docs/2017061691e72bce.pdf

Revista América Economía. (2017). *Ranking de universidades de Chile*. Retrieved from https://mba.americaeconomia.com/articulos/reportajes/conoce-los-resultados-del-ranking-de-universidades-chilenas-2017

Revista-Qué-Pasa. (2017). *Ranking de universidades chilenas 2017*. Retrieved from http://www.quepasa.cl/articulo/actualidad/2017/12/ranking-de-universidades-2017.shtml/

RICYT. (n.d.). Doctorates. Retrieved from http://db.ricyt.org/query/AR,BO,BR,CA,CL,CO,CR,CU,EC,ES,GT,HN,JM,MX,NI,PA,PE,PR,PT,PY,SV,TT,US,UY,VE,AL,IB/1990%2C2013/CDOCTORADO

The World Bank (2018b). *LAC Equity lab: income inequality—income distribution*. Retrieved from:http://www.worldbank.org/en/topic/poverty/lac-equity-lab1/income-inequality/income-distribution (accessed on 20 November 2018).

Schultz, T. W. (1970). *Investment in human capital: T*
he role of education and of research. New York: Free Press.

Valdivieso, P., Antivilo, A., & Barrios, J. (2006). Caracterización sociodemográfica de estudiantes que rinden la PSU, postulan y se matriculan en universidades del Consejo de Rectores. *Calidad en la Educación*,24, 319– 361.

Yin, R. K. (1981). The Case Study as a Serious Research Strategy. *Science Communication, 3*(1), 97-114. doi:10.1177/107554708100300106

Appendix

Questionnaire 1 - Protocol for Early Career Faculty in Engineering Departments

1. **Why did you decide to pursue a doctorate degree?**

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?

2. **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?**

3. **To what extent, if it all, did your undergraduate experience influence your decision of studying a doctorate degree?**

4. **Please, walk me through the process of how you decided which university to apply for your PhD? Which considerations and factors did you consider?**

5. **What was your family situation when you started your PhD? Were you in a relationship? Did you have kids?**

6. **What was the process of looking for a job? Please, walk me through to the moment when you started looking for a job.**

7. **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?**

8. **From the open calls that you saw, what were the most attractive job positions? What made them so attractive? Were they all faculty positions?**

9. **Which positions did you apply for, and why?**

10. **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?**

11. **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?**

12. **Taking into account your experience applying for faculty jobs and now being hired as a faculty member, what recommendations would you give to students interested in getting a job in academia? What information would you recommend them to include in their CVs?**

13. **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?**

14. **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?**

Table 4: From High School to Choosing an Undergraduate University

Participants			Undergraduate University			
Name	**Social Class of Origin**	**Location of Home**	**Factors Considered to Select Undergraduate University**	**UG Attended**	**UG Location**	**Years Accredited**
Alan	Upper	Metropolitan area	High score on the college admission test. Applied only to the two research-intensive universities that are considered the top universities in engineering. Opted for the undergraduate university that seemed more familiar to him.	University of the North	Metropolitan area	7
Mario	Upper	Metropolitan area	High score on college admission test, could go to any undergraduate university. Selected the university that offered the best infrastructure and had the highest degree of selectivity.	University of the North	Metropolitan area	7
Gonzalo	Upper	Metropolitan area	Perfect scores on the college admission test. He wanted to study engineering at another selective university, but he chose the undergraduate university that offered him the best fellowship package.	University of the South	Metropolitan area	7
Omar	Low	Metropolitan area	High score on the college admission test, but not high enough to be admitted to his first option. Among other alternatives, he selected an undergraduate university because it seemed closer to what was familiar for him.	University of the East	Metropolitan area	6
David	Low	Metropolitan area	High score on the college admission test. Aimed to study at one of the top research-intensive universities, but his score on the college admission test led him to the waiting list. Selected the best university he could pick in the Metropolitan area.	University of the East	Metropolitan area	6
Antonio	Upper	South region	High score on the college admission test, selected the university his dad recommended for having a strong emphasis on engineering. He ended up studying in the University of the Rivers.	University of the Rivers	Center region	6
Carlos	Middle	Center region	High score on the college admission test, picked the university that had a reputation of teaching "hard engineering" in his region. Did not apply to universities in the Metropolitan area because he thought the city was too big for him.	University of the Rivers	Center region	6
Gino	Upper	South region	High score on the college admission test. Picked the best university in his region. Felt too immature to leave home at age 17.	University of the Coast	South region	5
Gabriel	Low	South region	Relatively high score in the admission test. Selected the best university that he could afford with his score in the same region. Had option to study in Santiago, but it was abandoned for lack of economic resources.	University of the High Mountains	South region	5
Francisco	Low	Metropolitan area	Low score in the admission test. Wanted to study at one of the top research-intensive universities located in the Metropolitan region, but his score left him at the bottom of the waiting list. Entered his former undergraduate university, thinking he would retake the college admission test after the first year of his engineering program and go to his first undergraduate university preference.	University of the West South	Metropolitan area	4

Table 5: Process of Applying to PhD Programs

Participants		Process of Applying			Characteristics of PhD university selected		
Name	**Social Class Assigned**	**Actors Who Guided and Helped in the Process of Applying to Doctorate Programs**	**PhD Programs Applied To**	**Reason Associated with PhD Program Choice**	**PhD-granting U Selected**	**Country**	**University Ranking**
Alan	Upper	Highly influenced by his undergraduate and master's professors (same university), who guided him to select universities. Friends and former classmates pursuing doctorate degrees at the same time also helped.	Applied to six American universities, all ranked in the top 10 in its area. Admitted to almost all programs.	Selected the university with the highest ranking and more affordable cost of living among the ones that accepted him.	U of North America	USA	Top 50
Gonzalo	Upper	Early career scholar at a conference in Chile who was studying his PhD in the USA guided him in the process. Former undergraduate advisers guided him on which universities to apply to.	Applied to around 10 top-ranked American universities. Admitted to almost all programs.	Selected the university with the highest ranking.	U of North America	USA	Top 50
Mario	Upper	Relied on undergraduate professors, friends, and university rankings.	Applied to only American universities ranked between top 10 and 50 in its area. Accepted at the top 1 university in his area.	Selected the university with the highest ranking and the one where his partner felt comfortable.	U of North America	USA	Top 50
David	Low	Chilean supervisor helped him to connect with the person who became his PhD supervisor. Both professors helped him to apply to fellowships in Chile and Europe.	Applied to only one university in France.	Used the contacts he had established during his undergraduate degree. He did not look for further options.	U of Northern Europe	France	Non-ranked
Omar	Low	Supervisor of his undergraduate program guided him to look for universities in France, where he had studied his doctorate program. Being there, he selected his PhD university.	Applied to only one top-ranked university in France.	Looked for the best program in his area only in Europe. Thought he could go elsewhere, but opted for France since there were more connections with his academic department.	U of Southern Europe	France	Top 50
Antonio	Upper	Highly influenced by an undergraduate professor who had completed his doctorate degree in Europe as well as a close friend who was also pursuing a doctorate program.	Applied to several universities in Germany.	Selected the university with the lowest cost of living and better academic quality in Germany.	U of Western Europe	Germany	Non-ranked

Carlos	Middle	Highly influenced by university professors. Not interested in going abroad because of his romantic partner and his strong tie with his parents.	Was offered the chance to continue his PhD after he completed his master's degree in Chile.	Did not look for further options, thought of studying abroad but he wanted to stay closer to his partner.	U of the Rivers	Chile	Non-ranked
Gino	Upper	Supervisor of his undergraduate thesis provided recommendation letters, but mostly conducted the application process on his own.	Applied to only one university in Chile.	Selected what seemed to be the best academic option. Did not look for further options.	U of the North	Chile	Top 500
Gabriel	Low	Highly influenced by his supervisor who had recently completed his doctorate degree at the same university where he ended up selecting.	Applied to only one university in Chile.	Selected what seemed to be the best academic option. Did not look for further options.	U of the North	Chile	Top 500
Francisco	Middle	Undergraduate supervisor incentivized him to pursue his master's degree in Spain and he took advantage of his advisor's networks.	After completing his master's program, he received an offer from his master's supervisor to continue the PhD program. He accepted the offer without questioning or seeking other options.	Selected what seemed to be the best academic option. Did not look for further options.	U of the European Coast	Spain	Non-ranked

Table 6: Employment situation before starting a doctorate degree, and strategies used to secure a tenure-track faculty job

Participants	Before Completing PhD		Six Months before Completing PhD		Current Employer, Years of Accreditation
	Social Class of Origin	Undergrad → PhD	Employment Situation	Process of Looking for a Job	
Omar	Low	U of the East → U of Northern Europe	Hired in a tenure-track faculty position	Pre-hire agreement with his former undergraduate academic department before starting the PhD	U of the East, 6 Years
David	Low	U of the East → U of Southern Europe		Pre-hire agreement with his former undergraduate academic department during the second year of his PhD	U of the East, 6 Years
Carlos	Middle	U of the Rivers → U of the Rivers		PhD-supervisor notified him of a position available at the university where his supervisor had been recently hired	U of the West, 5 Years
Mario	Upper	U of the North → U of North America		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.	U of the North, 7 Years
Francisco	Middle	U of West South → U of the European Coast	Had a post-doc grant funded by European U, found another post-doc grant in Chile	Applied to a competitive post-doc grant funded by the Chilean government while he was finishing his first post-doc in Europe. This allowed him to negotiate a faculty tenure-track position with his Chilean postdoc institution	U of the Rivers, 6 Years
Gabriel	Low	U of the High Mountains --> U of the North	Had a part-time lecturer position	Found a lecturer job through his doctorate classmates during the last two years of the doctorate. University opened a tenure-track vacancy and he formally applied	U of the West, 5 Years
Alan	Upper	U of the North → U of North America	They actively were 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.	U of the North, 7 Years
Gonzalo	Upper	U of the South → U of North America		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 of the world.	U of the North, 7 Years
Antonio	Upper	U of the Rivers → U of Western Europe		Applied to around 10 open job calls. Contacted colleagues who already worked at the universities, telling their colleagues that he was looking for jobs.	U of the West, 5 Years
Gino	Upper	U of the Coast → U of the North		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.	U of the West, 5 Years

CONCLUSION

This dissertation consisted of a mixed method study, whose main aim was to determine to what extent and how social class of origin influences the careers of doctorate holders working as faculty in Chile. The essence of this question touches upon a classical question for sociologists of education regarding the role of education as an equalizer of social and economic opportunities for individuals from different social class status. Yet, few scholars have empirically analyzed the effect of social class of origin on the professional careers of doctorate holders, whether in terms of probability of being hired at institutions of different levels of prestige or levels of income. Unlike gender and race, social class of origin is expected to be imperceptible among doctorate holders, who, because of their specialized skills and knowledge acquired through 20 years of formal education, are seen as a selective minority; an intellectual elite with access to positions with high social status.

The three articles contained in this dissertation show that although social class of origin might not seem a salient category that influences the professional opportunities of doctorate holders working as faculty members in Chile, its effects are still valid for explaining who obtains faculty positions at the most prestigious universities and the highest levels of income.

Findings from the three articles confirm that a good number of individuals from low social class groups have completed their doctorate degrees, partially due to the considerable investment in PhD fellowships sponsored by the Chilean government to study in Chile and abroad. The first article – "Unfolding the direct and indirect effects of social class of origin on faculty income" – shows that social class of origin has an indirect effect on income through unequal chances of entering prestigious universities. It also shows that coming from the lowest social class has a direct

effect on income, which raises the hypothesis that there may be barriers of access to compete for the highest-paid faculty positions that cannot be sorted out through education.

Indeed, the other two articles reveal that there are three main mechanisms, that occur during the faculty hiring process, that contribute to preserving the gap between academics from different social class backgrounds. Specifically, the second article – "The Limits of Academic Merit in Chile…" – on how academic departments conduct recruitment and shorten the list of applicants shows that not all academic departments disseminate faculty job announcements publicly. The first mechanism of social class reproduction in Chilean academia occurs through networks. The article – "Seeking Faculty Jobs" – demonstrates that the connections established with professors and peers during undergraduate study then become the main point of contacts to find out about Chilean faculty jobs for the doctorate holders who studied abroad. Due to the strong association between students' social class of origin and prestige of the undergraduate university, academic departments that intentionally favor undergraduate alumni (inbreeding) in their faculty hiring will end up reproducing the stratification of the undergraduate level in the processes of faculty hiring. Consequently, this practice restricts the possibility that doctorate holders who come from the lowest class get faculty positions at the most prestigious universities in Chile and vice-versa.

The second mechanism through which social class gets reproduced in the careers of faculty is through unequal access to prestigious doctoral universities. The article "The Limits of Academic Merit" reveals that academic departments, particularly in economics with a great number of applications, use the level of prestige of the PhD-granting university as a shortcut for reducing the number of applicants, or as a criterion for shortening the list of who will receive a job call. Using this selection criterion (un)intentionally favors candidates from upper social classes, mainly because the prestige of PhD-granting universities is measured by international university rankings

that disproportionally favor the model of research-intensive universities located in non-Spanish-speaking western industrialized countries. Access to top-ranked, prestigious foreign universities not only requires an understanding of how to apply to postgraduate programs at such universities but also proficiency in a foreign language, which in the Chilean context is closely associated with upper-middle or upper social class. Also, the article "Seeking Faculty Jobs..." reveals that intending to apply to top-ranked foreign universities requires a situation where the doctoral student is free of financial responsibility of contributing to familial income. Such obligations are often the duty of doctorate holders from low social class of origin.

Finally, the third mechanism that contributes to maintaining the effect of social class along the careers of academics is the lack of formal procedures that account for and prevent conscious and unconscious bias in faculty hiring processes. As the second article of this dissertation showed, faculty in hiring committees make several subjective calculations concerning which candidates are likely to accept the faculty job to select the short list of applicants. Lack of critical analysis on how processes of recruiting and hiring criteria could exert unconscious biases by class (or gender, race, immigration status) exacerbates, or at least reproduces, the effect of social class of origin transferred through networks and the prestige of PhD-granting and undergraduate universities.

These three social-class reproduction mechanisms do not neglect the principles of the human capital or knowledge economy, that hold education and scientific knowledge to be a catalyst of economic and social prosperity. Indeed, the stories of doctorate holders from low and middle class show that they were able to climb up the social structure, but the findings of this dissertation show that there is a limit in the equalizing power of gaining specialized skills and the doctorate credential per se. This limit has a lot to do with the willingness of employing institutions, particularly the most prestigious ones, to call into question the premises and rationales that define

"who is included and excluded" in the short lits of applicants who will receive a job interview. Critical reflection on the multiple biases of the hiring process that might favor individuals with a specific social class background (or gender, race, nationality, etc. to the extent these work similarly to class) might not change “who” tends to gets the faculty job", due to structural conditions of access that might still restrict individuals from low social class from completing graduate education. Nonetheless, knowing and naming these biases would at least guarantee more awareness and open the potential for change in practices of hiring.

As Zen teachings explain, awareness will not solve the problems of the world or change the current conditions of high social inequality that Chile has, but allows us to become conscious of the roots of the problem and be more cautious about the promises attributed to education and knowledge in a stratified higher education system by class. I trust that this dissertation contributes to unpacking the limits of academic merit in determining individual outcomes and inspiring the questions and actions that will guarantee that higher education actually exerts more fully its power of equality and liberation.