

MARKET COMPETITION AND INDIVIDUAL SECURITY
IN THE CHILEAN PENSION SYSTEM

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Dedicated to my mother, my father,
and my grandmother, Jacquelyn.

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ABSTRACT

WILLIAM ERIC MAHONEY:

Market Competition and Individual Security in the
Chilean Pension System

(Under the direction of Dr. Oliver Dinius)

In 1981, Chile was the first country in the world to implement a privatized elderly social security system: the *Administradoras de Fondos de Pensiones* (AFP). The system's creators argued that the forces of market competition would improve pension amounts and that the AFP would promote nation-wide equality in the pension system—the former pension system was not one system, but a collection of pension systems that were highly stratified by class. In 2017, pension payouts have not met expectations, and the AFP is one of the most salient and contentious issues in Chilean politics. The overarching objective of this thesis is to add to the scholarly discussion of the ability of the AFP—and privatized systems more generally—to provide social protection to the elderly. This thesis tries to illuminate how market competitiveness in the AFP affects individuals in Chile, especially those of lower incomes. To that end, I use the Herfindahl-Hirschman Index (HHI) to measure market concentration within the AFP at the regional level and the level of different income tax brackets. Market concentration can be measured empirically and used to assess the level of market competitiveness, which is a normative judgement. I argue that competition in the AFP is most vigorous in wealthy regions and for wealthy Chileans. I further argue that both high competition and low competition are self-reinforcing. As a result of these findings, I make the policy recommendations of improving financial literacy & knowledge of the pension system and of expanding *licitación*, the auction mechanism in which AFPs bid for new affiliates by offering the lowest commissions, to improve competition. I conclude that the most important contribution of my thesis is that I show that the class segmentation of the old Chilean pension system, which the AFP supposedly eliminated, is still present.

PROLOGUE

In the United States, I am guilty, and our society is, of ignorance of the poor. When I am home in Denver and walk in certain parts of downtown, I occasionally cross paths with a homeless person. The reality is that it is easier to avoid eye-contact and walk by. Oxford and Lafayette county, Mississippi, are particularly notable for their inequalities. I attend university on scholarship and the largesse of my parents, yet many of the people who make the university and the town function—the janitors, gardeners, food-service workers, and others—make low wages and must commute from outside the county because the cost of living here is too high. However, it takes some deliberate contemplation to recognize this disparity. I am not as aware of my good fortune, nor aware of the tribulations of others, quite like I was while living in Chile.

During past trips to Mexico and Guatemala, I witnessed extreme poverty, but those brief stays were not the same as living in a highly unequal society for a sustained period. Living in Chile made me confront the fact that there are many people who are less fortunate than me. In Valparaíso, men and children in ragged clothes would precariously hop on-and-off the darting busses to sell individual bandages or candy bars at \$50 Chilean pesos (about 8¢). Elderly women who appeared to be in their seventies or eighties would sit in the street and knit a few woolen caps a day to sell for \$2000 pesos each. The Pontifical Catholic University of Valparaíso, where I studied, was in an especially poor part of the city. Homeless men and women would sleep and drink beer in a camp underneath the highway by the University, and farmers used donkeys to ferry fruit and vegetables to the market next door. Valparaíso is famous for its large hills that jut against the Pacific coast. Because of the arduousness of climbing the steep hills, the higher up you went on them, the cheaper the land and the poorer the inhabitants. Just one hill over from where I lived, people lived in shacks made from tarps and refuse wood. Their floors were dirt, trash was littered all around them, and feral dogs roamed the area.

My home in Chile was a duplex in a lower-middle class neighborhood that shared a wall with an auto repair shop. I lived with a host mother who did not work—she derived her income from the money I paid for room & board and remittances from family members. Despite her modest income, she had a maid come twice a week on Mondays and Thursdays. The most personal example of income inequality was the inequality between those of us living in the house and our maid. Our maid was a middle-aged, portly woman who loved to sing while she worked. She would arrive mid-morning, sometimes late, and begin preparing the day's *almuerzo*. The rest of her day consisted of sweeping and mopping the floors, scrubbing the kitchen, washing the dishes (which would be left piled up for her from previous days), cleaning the bathrooms, making up the bedrooms, doing the laundry, feeding the dog, watering the garden, and picking up the destruction caused by the grandchildren who would visit every other weekend.

Our house was not large, but a list of chores like that is enough to make it seem large, and it took the *nana* all day to do her job. For all her labor, she was compensated with \$10,000 pesos (about \$15 at the time) and included in our lunch, although she was expected to serve us and was not permitted to indulge in a beer or a glass of wine as we did. I knew that our *nana* spent about \$1000 pesos on bus-fare alone to get to and from our house, meaning that she netted \$9,000 pesos. I don't know if she had any other incidental expenditures associated with work. I do know her husband did not work, and that her daughter and granddaughter lived with her, with only the addition of her son's income to provide for the whole family.

The inequality between my *nana* and I became more apparent as I got to know her. A seemingly banal example of inequality was the box of mixed nuts that I bought from a supermarket and brought home one day. She scoffed at my purchase and told me that I could have bought much more for much less at the market by the university. Another example of inequality was the trip I took on a long weekend to Pucón, a resort town in south central Chile that is known as the adventure sport capitol of the country. My *nana* remarked to me that she had never been, but always wanted to go; the travel, accommodations, food, and activities were far too expensive for her. These interactions helped me to internalize the inequality I experienced in Chile. I thought of my home in Chile, and the homes on the hill over from mine, and wondered what my *nana*'s home looked like and what the quality of her family's life was like. I realized that shopping in a supermarket could be a luxury. I was struck and embarrassed by the fact that I, a five-month interloper in Chile, nonchalantly made plans to go somewhere in her own country that she had always wanted to visit, but never had the means to go.

I assume that my *nana* will work well into old-age or until she no longer can. I hope the same for myself, but that it is out of zeal for my profession and not necessity. This is yet another luxury that I may have. I still wonder about my *nana*. What will she do when she can no longer work? How will she survive? Will her children have to divert resources from themselves—that could be used to better their lot in life—to her? I also wonder about the societal implications between the haves and the have-nots. What do those of us who are more fortunate owe those who are less fortunate? And, what should society do so that these disparities are lessened for current generations and not perpetuated for the next ones?

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LIST OF ABBREVIATIONS

- AFP — Administrator[s] of Pension Funds (*Administradora[s] de Fondos de Pensiones*)
ANSCO — National Trade Union of Copper Supervisors (*Asociación Gremial Nacional de Supervisores del Cobre*)
APS — Previsional Solidarity Contribution (*Aporte Previsional Solidario*)
CEPAL — United Nations Economic Commission for Latin America and the Caribbean
CLP — Chilean peso
DB — Defined benefit
DC — Defined contribution
DOJ — United States Department of Justice
EPS — Social Provision Survey (*Encuesta de Previsión Social*)
FNE — National Economic Prosecutor (*Fiscalía Nacional Económica*)
HDI — Human Development Index
HHI — Herfindahl-Hirschman Index
ILO — International Labor Organization
OECD — Organization for Economic Cooperation and Development
PAYGO — “Pay-as-you-go” (*sobre la marcha*)
PBS — Basic Solidarity Pension (*Pensión Básica Solidaria*)
RM — Santiago Metropolitan Region (*Región Metropolitana*)
SAFP — The Superintendence of Administrators of Pension Funds (*La Superintendencia de Administradoras de Fondos de Pensiones*)

INTRODUCTION

On February 17th, 2016, four days before I left for my semester in Chile, I got an email from my grandfather:

Attached is a fascinating article because it deals with Chile's 'reformed' social security system... Reforming Social Security has been one of my long-time issues of interest and the Cato Institute has been a leader in the area over the years. Hopefully, this will give you a subject which you can now discuss with your new Chilean hosts and friends!

The article extolled the wonders of the privatized Chilean pension system—the *Administradoras de Fondos de Pensiones* (“Administrators of Pension Funds”, AFP) and was written by a man named José Piñera, the “father” of the system.¹ The article postulated that a similar-style system might have been implemented in the United States during the Clinton Presidency, had the reform not been derailed by the Monica Lewinsky scandal. I knew that I would have to write a senior thesis, but I did not have a topic yet. The article’s praise of the Chilean pension system and its details of the possibility of a similar reform in the United States were interesting, so I made researching the AFP a part of my studies in Chile.

The current Chilean pension system was created in 1981 under the dictatorial regime of Augusto Pinochet, and it is the oldest privatized pension system in the world—it is administered by private corporations, not the Chilean state. All workers are obliged

¹ Piñera, José. *President Clinton and the Chilean Model*. Rep. 1st ed. Vol. XXXVIII. Washington D.C.: Cato Institute, 2016. Print.

to invest 10% of their income with a money-management company of their choice.²

There are currently six companies that offer pension plans. With each company, workers can choose from five levels of risk (*A-E*) in which to have their income managed, known as *multifondos*, or “multifunds”. In theory, Chilean workers will make contributions for the entirety of their working lives, starting at a young age in an aggressive (*A* or *B*) level of risk. They will progress to the lowest level of risk as they approach retirement age, 65 for men and 60 for women, ideally having amassed a sizeable balance of savings. They may then use this balance to purchase an annuity or receive their pension as a programmed withdrawal.

Other countries in Latin America, Southeast Asia, and Eastern Europe have copied the Chilean pension system, but judgement on the AFP by those who study it is mixed. Its supporters tout its macroeconomic success; the AFP has enjoyed an annual real rate of return of 8.6% since 1981.³ As of February 2017, AFP investments are worth \$185.4 billion, equal to approximately 70% of Chile’s GDP, and, of that amount, \$113 billion (61% of funds) are invested in Chile.⁴ Nevertheless, the AFP’s detractors argue that while the returns from the AFP have been high, the payouts have been poor; the contributions made by workers have experienced high returns, but because their contribution amounts are low, they do not amass a sizeable pension. In fact, the average monthly pension of \$315 is less than the monthly minimum wage salary of \$384. The

² In addition to the 10% tax on wages, the companies receive commissions, as of now 0.41% to 1.54% of monthly income—depending on the AFP—for a total of 10.41% to 11.54% of worker income going to the pension system.

³ Mesa Lago, Carmelo, and Fabio Bertranou. “Pension Reforms in Chile and Social Security Principles, 1981-2015.” *International Social Security Review* 69.1 (2016): 25-45. Web

⁴ *Inversiones y rentabilidad de los fondos de pensiones febrero de 2017*. Rep. Santiago: Superintendencia de Pensiones. Print.

national frustration with low pensions erupted on August 21st, 2016, when hundreds of thousands of people protested across the country after it was revealed that the ex-wife of a Socialist Party leader was receiving a monthly pension of \$7,800.⁵ Clearly, I selected a contentious topic. The difficulty in writing a thesis about the AFP would lie not in finding an aspect of it to write about, but in selecting just one.

Research Objectives

The overarching objective of this thesis is to add to the scholarly discussion of the ability of the AFP—and privatized systems more generally—to provide social protection to the elderly. This thesis tries to illuminate how market competitiveness in the AFP affects individuals in Chile, especially those of lower incomes, such as my nana in Valparaíso. To that end, I measure market concentration within the AFP at the regional level and the level of different income tax brackets. Market concentration can be measured empirically and used to assess the level of market competitiveness, which is a normative judgement.

At the turn of the 20th century, ensuring care for the elderly was largely left to the family unit. At that time, states began to take more active roles in the provision of elderly social security. The rationale that the state should provide some form of elderly social security is that workers deserve a basic level of income-security, independent of their success in the labor market and their family status. From another perspective, it is not in the interest of society to have a class of indigent elderly people. Before the AFP, there were no national-level, privatized, elderly social security systems. Basic elderly social

⁵ Bonnefoy, Pascale. “With Pensions Like This (\$315 a Month), Chileans Wonder How They’ll Ever Retire.” The New York Times, 10 Sept. 2016. Web. 15 Oct. 2016.

security for all was deemed too difficult and too important to leave to the market alone. The AFP was pioneering in that it was the first example of a state devolving its role in the provision of elderly social security to private corporations and individuals. Chile's economic leaders justified the creation of the AFP under the assertion that a *competitive free market* for elderly social security would result in more efficient spending and promote greater individual choice than a government-run system. Workers would be able to get a larger pension for lower contributions.

The assertion that an elderly social security system based on a competitive free market is superior to a government-run system is rooted in the principle in classical economics that maximum total utility is best achieved in a competitive free market. The spirit of such a market is dynamic. In a competitive free market, firms must innovate to keep their market share. Firms that maintain the status quo will be supplanted by other firms with a comparative advantage. In contrast, an uncompetitive market, such as a monopoly or an oligopoly, lacks innovation. In a market with only one firm or few firms, there is less pressure for a firm to improve because individuals lack other options. Maximum total utility is not achieved, compared to the competitive market.

As I was exploring the database of the *Superintendencia de Administradoras de Fondos de Pensiones* (“Superintendence of Administrators of Pension Funds”, SAFP, the government agency that oversees the AFP), however, *it seemed to me that the AFP market was not as competitive as it was hoped it would be*. At the national level, the six AFPs vary significantly in terms of their market share of customers and the amount of money they manage. For example, as of December 2016, the largest AFP by share of customers, AFP Provida, has a market share of 29.7% of the contributors to the system,

while the smallest AFP by share of contributors, AFP Cuprum, has a market share of 8.1%.⁶ This seemed at odds with the fact that AFP Cuprum administers 20.2% of the funds in the system and that AFP Provida administers 25.9% of the funds in the system.⁷ Therefore, Cuprum had a smaller, but wealthier clientele, and Provida has a larger, but poorer clientele. Further examination of the data revealed that at a regional level, the market shares of the companies differed significantly from their national totals. It appeared that there was more competition between companies for customers in some northern regions, while there was less competition between companies for customers in other regions. I also looked at the market shares of the companies based on different income tax brackets. It appeared that there was more competition between companies for rich customers and less competition between companies for poor customers. These facts were not evident in news articles and blog posts about the AFP, nor academic assessments of it. It is only by downloading and poring over spreadsheets that I noticed them.

Since the law mandates that all citizens be treated equally by the AFPs, I wondered, what are the implications of the variances in the level of market competition in different regions and in different income tax brackets? There are logical questions that one might ask, such as: Are workers in rich regions treated the same as workers in poor ones? Are workers in low income tax brackets treated the same as those in high income tax brackets? And, how does competition in the AFP affect current and future retirees?

⁶ *Número de cotizantes por región y AFP [Number of Contributors by Region and AFP]. Rep. Superintendencia de Pensiones, 2017. Centro de Estadísticas de la Superintendencia de Pensiones. Web.* December 2016 is the most recent date for data on customer market share. The next release of data will happen in May 2017 and will be data concerning March 2017.

⁷ *Inversiones y rentabilidad de los fondos de pensiones febrero de 2017.* Superintendencia de Pensiones.

Outline of Thesis

Chapter I provides the reader with the basis to understand my analysis in Chapter III. It begins with an introduction to the level of development and political and physical geography of Chile. Chile's geography helps to explain its differences in regional wealth and regional population distribution, which are factors that will affect the regional market competitiveness of the AFP. Next, I detail some of the theory, history, and analysis used by scholars who study pension systems. This context is the foundation for the subsequent explanation of the *historical structure* and *current structure* of the Chilean pension system. The reader will come away from Chapter I prepared for the discussion of my methodology and more specific aspects of the AFP in Chapter II, as well as prepared for my analysis in Chapter III.

Chapter II discusses my methodology and reviews pertinent scholarly literature. It is important to define how I will assess market competitiveness. The standard I will use is the Herfindahl-Hirschman Index (HHI). The HHI is a measure of market concentration developed independently by the economists Orris Herfindahl and Albert Hirschman that is used by antitrust regulators such as the United States Department of Justice (DOJ) and the office of the Chilean *Fiscalía Nacional Económica* ("National Economic Prosecutor", FNE) to make judgements on market competitiveness. Chapter II then reviews scholarly literature on the market competitiveness of the AFP and on regional development in Chile.

Chapter III contains my original work. It uses data from the SAFP's Trimestral Statistical Report of Affiliates and Contributors ("*Informe Estadístico Trimestral de Afiliados y Cotizantes*") to measure market concentration within the AFP at the regional

level and the level of different income tax brackets. I argue that competition in the AFP is most vigorous in wealthy regions and for wealthy Chileans. I further argue that both high competition and low competition are self-reinforcing.

Chapter IV discusses the implications of my analysis in Chapter III. It begins with the economic concepts of *efficiency* and *equity*. Economists prioritized efficiency when they created the AFP, at the expense of equity, although the AFP is still inefficient. Second, Chapter IV specifically considers what the effects of the differentials in market competitiveness in the AFP are for all Chileans, with most attention given to the case of the poorest Chileans. Using these considerations, Chapter IV makes the policy recommendations of improving financial literacy and knowledge of the pension system—especially that of the poorest Chileans—and of expanding *licitación* (“licitation”), the auction mechanism in which AFPs bid for new affiliates by offering the lowest commissions, to improve competition. Third, Chapter IV suggests that additional research could investigate the statistical significance of my findings and examine the qualitative side of these data. Finally, Chapter IV concludes that the most important contribution of my thesis is that I show that the class segmentation of the old Chilean pension system, which the AFP supposedly eliminated, is still present.

CHAPTER I: BACKGROUND INFORMATION

I begin with an introduction to Chile for an additional reason: my experience suggests that some readers are unfamiliar with Chile. Because of its high level of development, relative political stability, and relatively small population, Chile is neglected in the United States' consciousness, especially compared to other Latin American countries.

Chile — Development and Geography

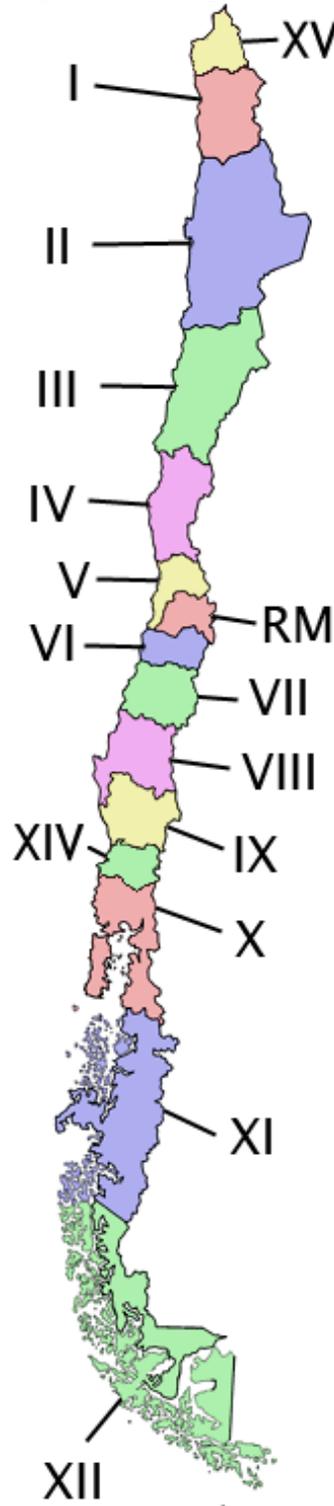
Chile is the wealthiest country in Latin America on a per-capita basis, with a GDP per-capita of \$13,383 and a median per-capita yearly income of \$5,330,⁸ and has the highest Human Development Index (HDI, the United Nations' measure for overall quality of life) in Latin America of 0.85. This ranks Chile among the countries with "very high human development" and a higher human development than Saudi Arabia, Portugal, and Russia. Yet, one-third of Chile's economy is underground, and Chile has one of the highest Gini indexes (a measure of income inequality) in the world of 50.45.

Geographically, Chile is a long but narrow country. It is approximately 2,700 miles in length but only 217 miles wide at its widest point. Chile spans 39° of latitude, more than the difference in latitude between Miami and Anchorage, and thus Chile has at least ten major climactic subtypes. Far northern Chile is home to the world's most Arid desert, the Atacama. The northern regions are the epicenter of Chile's copper wealth, (copper

⁸ "World Development Indicators: Chile." The World Bank, 10 Aug. 2016. Web. 19 Sept. 2016.

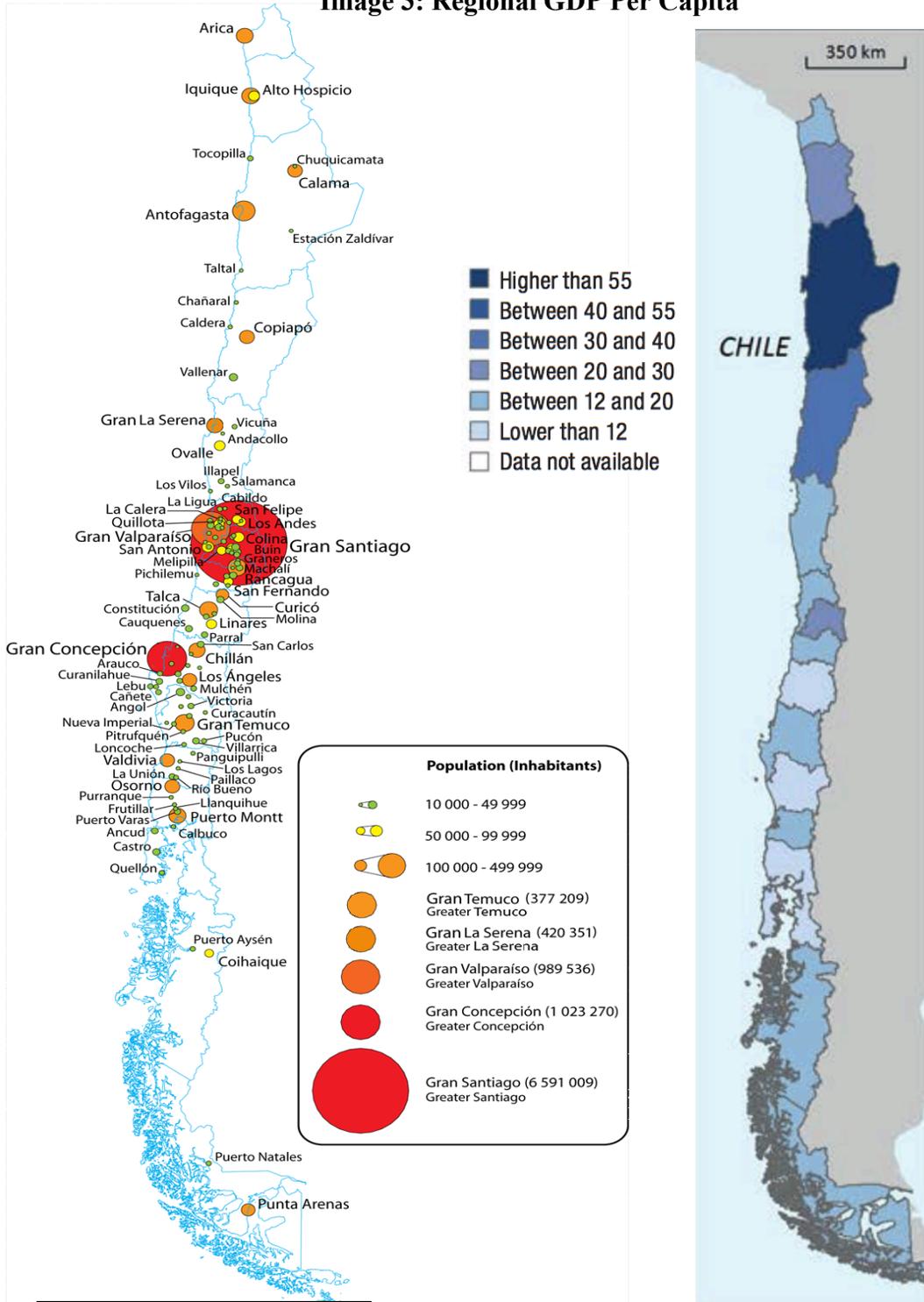
accounts for 20% of GDP), and the four northernmost regions contain 8.4% of Chile's population. The wealth of the copper industry is what makes this relatively high amount of population sustainable in such an inhospitable place. Central Chile is fertile land that is home to Chile's agricultural production. Santiago, located in the center of the country, dominates Chile politically, socially, and economically. The Santiago Metropolitan Region (RM) itself accounts for 40% of Chile's population, and when combined with the V and VI regions, the Santiago exurban area accounts for 55% of population. Finally, the far south of Chile is known for its rugged Patagonian landscape. The two southernmost regions benefit economically from hydrocarbon extraction, as well as timber resources, aquaculture, livestock, and tourism. Regions XI and XII contain 1.5% of Chile's population. While in percentage terms, Regions XI and XII do not contribute much to national GDP (less than 2%), they have comparatively higher GDP per capita than other regions because their absolute GDP are high, relative to their small populations.

Image 1: The Regions of Chile⁹



⁹ *Regions of Chile*. Digital image. Wikipedia. Web. 25 Feb. 2017. <https://en.wikipedia.org/wiki/Regions_of_Chile>.

Image 2: Population Distribution of Chile¹⁰
Image 3: Regional GDP Per Capita¹¹



¹⁰ *Population Distribution of Chile*. Digital image. Wikipedia. Web. 25 Feb. 2017.

<<https://upload.wikimedia.org/wikipedia/commons/b/b7/Cl-cities.png>>.

¹¹ OECD (2016), *OECD Regions at a Glance 2016*, OECD Publishing, Paris.

<http://dx.doi.org/10.1787/reg_glance-2016-en>. p. 64. Constant 2010 USD PPP in thousands

The Theory of Pension Systems

In the United Nations' International Labor Organization (ILO) *Social Security Minimum Standards Convention*, the ILO defines “social security systems” as a series of programs that protect citizens from “the insecurities related to making a living through work”. According to the ILO, there are “nine principal branches of social security”. These branches are benefits for: medical care, sickness, unemployment, old age, employment injury, family, maternity, invalidity and survivors.¹² The size and scope of a social security system is a response to questions such as: *What should social security entail? Should it be available to all? To what degree should eligibility be tied to work and payment history?* These questions are contentious, and different ideologies have different responses to them. Because the AFP is designed primarily to cover the old age portion of social security,¹³ going forward, I shall use variations of the terms “pension system” and “pension prevision” when referring to the AFP and the subset of social security that protects the elderly.¹⁴

The first national pension systems were founded at the turn of the 20th century and took on two different models. One model was the German contributory insurance model.¹⁵ In 1891, a pension insurance system was included in Bismarck's introduction of

¹² “International Labour Standards on Social Security.” International Labour Organization. Web. 11 Mar. 2017. <<http://ilo.org/global/standards/subjects-covered-by-international-labour-standards/social-security/lang--en/index.htm>>. The 1952 Convention is “the flagship of all ILO social security Conventions, as it is the only international instrument, based on basic social security principles, that establishes worldwide-agreed minimum standards for all nine branches of social security”.

¹³ Although it encompasses other portions, such as invalidity and survivors' benefits

¹⁴ Mirroring the Spanish term for old-age social security: *previsión*. While the AFP's coverage mandate is similar, the system is significantly different from the United States government program Social Security. (The US program is also much narrower in focus than the ILO definition of its name would suggest.)

¹⁵ Baily, Martin Neil, and Jacob Funk Kirkegaard. *US Pension Reform: Lessons from Other Countries*. Washington DC: Peterson Institute for International Economics, 2009. Print. p.110

social welfare measures designed to promote the cohesion of states that made up the newly formed German Empire. The system was funded by workers, employers, and the government, and was strictly a *defined contribution* (DC) system, meaning that pensioners received benefits that were directly proportional to what they paid into the system. The other model was the British “universal means-tested model”.¹⁶ In 1908 in Britain, the Old Age Pension Act granted a universal, old-age, flat-rate pension that was paid out of the general funds of the Treasury (known as a *defined benefit* (DB) system). The system had no contribution requirements, which made it highly redistributive, although the law was constructed in a way that made it easy to exclude beneficiaries.¹⁷

Today, national pension systems follow the precedence of the German and British models. Of the countries in the OECD, the most redistributive national pension systems in order are New Zealand, Ireland, Canada, the United Kingdom, and Australia.¹⁸ The United States’ pension system is also relatively redistributive, in 11th place, but it is the least redistributive of the Anglophone countries and relies more than 80% on defined contributions. Meanwhile, the modern German pension system is less redistributive than the OECD average and relies more than 80% on defined contributions as well. As an observation, less redistributive pension systems tend to have more generous benefits, are easier to fund, and tend to be more popular with countries’ citizens, but they provide less support to the poor. More redistributive pension systems tend to be low in benefits paid out, are harder to fund, and have varying degrees of popularity, but they provide more

¹⁶ *ibid.* p. 109

¹⁷ Elderly persons who met the means test could be denied a pension if the administrators determined that they had not worked “up to their potential”.

¹⁸ Baily and Kirkegaard, p. 109-110

support to the poor. Table 1 includes some of the broad criteria that may be used to classify pension systems. These criteria are not binary, and pension systems are often hybrids to some degree of each criterion.

Table 1: Pension System Classification

Pension System Classification ¹⁹	
Criterion:	Classification:
Stipulated Obligations	Defined Benefit (DB): No contribution level is stipulated. Benefits are automatic, although they may be means-tested.
	Defined Contribution (DC): Workers must contribute a certain amount or percentage of income. Benefits are a function of contributions.
Type of Administration	Public: The pension is administered by institutions pertaining to the state.
	Private: The pension is administered by for-profit or non-profit, private entities. The state only acts in a regulatory capacity.
Method of Financing	Transfer Payments: Current workers subsidize current retirees. The pension is viewed as an intergenerational obligation. Also known as “pay-as-you-go” (PAYGO).
	Capitalization: The pensioner finances their own pension. The pension may be invested, and the investment may be done so individually or collectively.
Participation Mandate	Obligatory: Workers are obligated to affiliate with the pension system and make contributions.
	Voluntary: Individuals affiliate with the pension system and contribute on their own accord.

¹⁹ Original work, but inspired by: Rubilar Maturana, Claudina, and César Venegas Piñeda. “El desempeño de los fondos de pensiones a través de la rentabilidad, eficiencia y comportamiento de mercado de las Administradoras de Fondos de Pensiones en Chile, para el periodo 2006-2011: Un enfoque económico-financiero.” Thesis. Pontificia Universidad Católica De Valparaíso, 2012. Print. p. 12; and Mesa-Lago, Carmelo. “Structural Reform of Social Security Pensions in Latin America: Models, Characteristics, Results and Conclusions.” *International Social Security Review* 54.4 (2001): 67-92. Print.

The Chilean Pension System – Historical Structure

In 1924, Chile was the first country in the Western Hemisphere to establish a national pension system for the elderly, widows, and the disabled.²⁰ The original Chilean pension system lacked uniformity, with different regimes for different segments of the population. At its foundation, there were three regimes, one each for manual laborers, salaried workers, and public employees.²¹ Through accommodations and dispensations by the government to special interest groups, by the late 1970s it comprised thirty major regimes and as many as one-hundred fifty parallel and sub-regimes based on occupation, education level, risks associated with employment, and other factors. These stratified pension regimes were administered by more than 600 different entities.²² In 1979, contributors were allocated 94% into the three original regimes. Meanwhile, the thirteen smallest regimes had less than 1000 members in each.²³

Edwards writes “the original system was not, as it has often been argued, a pure pay-as-you-go-one” but a system based on the collective capitalization of funds.²⁴ However, by the 1970s, the system relied on the government to fund its obligations and was essentially an insolvent PAYGO system. Government patronage went disproportionately to societal elites. Each pension regime had different contribution requirements, benefit levels, retirement ages, indexation methods, and administrative bodies. Some government workers could retire as early as 42, while workers in the major

²⁰ Kritzer, Barbara E. “Privatizing Social Security: The Chilean Experience.” *Social Security Bulletin* 1996: 45-55. Division of Program Analysis, Office of Research, Evaluation and Statistics, Social Security Administration. Web. p. 45

²¹ “Previsión social.” *Memoria Chilena*. Biblioteca Nacional De Chile, 2016. Web. <<http://www.memoriachilena.cl/602/w3-article-93766.html>>.

²² Arenas De Mesa, Alberto. *Cobertura previsional en Chile: Lecciones y desafíos del sistema de pensiones administrado por el sector privado*. Rep. no. 105. Santiago: United Nations, 2000. Print. p. 12

²³ Kritzer, p. 45

²⁴ Edwards, Sebastian. “The Chilean Pension Reform: A Pioneering Program.” *Privatizing Social Security*. Ed. Martin S. Feldstein. U of Chicago, 1998. 33-62. Print., p. 37

manual labor regime had to retire at 65. The most egregious example of the corruption of the original pension system is the case of the Chilean equestrian sports industry, as outlined by Piñera. For the eight polo and horse racing clubs in Chile, there were two pension regimes—one for breeders, trainers, and jockeys, and one for the employees of the clubs themselves—and in each regime a worker could retire after ten years of service. Not surprisingly, the clubs enrolled far more people in their pension regimes than they employed. On paper, Chile had the highest ratio of horse trainers to racehorses in the world.²⁵

The critical issue of the old system was not just the high benefits promised. Lack of contributions also harmed the financial state of the old pension system. While contribution *obligations* ranged from 16-26% of wages for the various regimes, and in 1980 the average contribution obligation was 19%,²⁶ few workers *actually* contributed. The high contribution rates encouraged workers and employers to evade official employment or employment altogether. In addition, it was easy to game the system. Workers were guaranteed a basic pension, so they did not need to contribute at all. Conversely, workers could under-report their earnings until their last five years of employment, as those were the only years that were used to calculate benefits, thereby minimizing their contributions while maximizing their benefits.²⁷

The structural problems of the former Chilean pension system were exacerbated by the (complicated) economic crisis following the election of Salvador Allende in 1970. With triple normal unemployment and hyperinflation of the peso, the government

²⁵ Piñera, José. *El cascabel al gato*. Web. <http://www.josepinera.org/zrespaldo/el_cascabel_al_gato.pdf>. p. 11

²⁶ Edwards, p. 38

²⁷ Krieter, p. 46

lowered the percentage of wages for contribution obligations to try and encourage employment and indexed pensions below inflation to try and decrease benefits. Still, because of unemployment, informal employment, and evasion, the ratio of contributors to workers declined from 12:1 in 1955 to 2:1 during the tumultuous 1970s. In 1968, 18.1% of GDP was spent by the private and public sector on pensions²⁸, and in 1971 liabilities exceeded 100% of Chile's GDP.²⁹ Following the 1973 *golpe del estado*, subsequent political and economic sanctions on Chile by the international community for human rights abuses and antidemocratic practices further strained the pension system.

The authoritarian government of Augusto Pinochet implemented what today are referred to as neoliberal reforms in late 1974 and early 1975. Chile can be considered the “laboratory” of neoliberal reform. These early neoliberal reforms included trade liberalization (the elimination of all import quotas and a uniform import tariff of 10%), the privatization of government-owned banks and other firms that were nationalized under the Allende government,³⁰ the introduction of a national sales tax and the reduction of the tax code, the “drastic” reduction of regulations on the banking and financial sectors, and the introduction of a two-tiered insurance-based healthcare system—repealing the socialized one.³¹ At the beginning of 1980, Chile's economic leaders turned their sights on the pension system. Then Minister of Labor José Piñera persuaded General Pinochet that the old pension system was an albatross on the neck of Chile and began

²⁸ Piñera, *El cascabel al gato*, p. 2

²⁹ Edwards, p. 38

³⁰ A more robust round of privatization would not begin until 1984 that resulted in the privatization of 96% of state-owned enterprises, including the national airline, telephone company, and water and electric utilities. Notably, the copper industry (20% of GDP) remains largely state-owned.

³¹ Edwards, p. 35; I list some of the neoliberal reforms undertaken because the extent of the reforms and the fact that they were about simultaneous has made it difficult to access the effects of any *one* reform. This includes the AFP.

drafting a reform. On May 1st, 1980—International Labor Day—the Ministry of Labor announced that the government would replace the old pension system with one based on individual capitalization. The overhaul was delayed, however, with the announcement on August 11th of a plebiscite on the constitution of 1980 and Pinochet as president, set for September 11th. After the *Sí* vote of the plebiscite, negotiations of the pension reform resumed. On November 4th, 1980, the military government issued decrees 3,500 and 3,501, creating the AFP and setting Labor Day 1981 for the new system's implementation. Special interests, including the military, opposed the termination of the old pension regime. The Ministry of Labor promised that the AFP would promote equality by doing away with the dispensations to select groups and unifying all Chileans under the same pension regime. Nevertheless, the final draft of the law that went into effect on May 1, 1981 had a caveat: the military would be excluded from the new reform and free to maintain their old, generous regime. Chilean workers who had already paid into an old pension regime were given the option to stay with their pension regime or enroll in the new system, but all new workers would only have the option to participate in the AFP.

The Chilean Pension System – Modern Structure

Once again, the AFP has enjoyed an annual real rate of return of 8.6% since its inception, and as of February 2017, AFP investments are worth \$185.4 billion—equal to approximately 70% of Chile's GDP. Despite this overall high return, the pension payouts have been poor because worker contribution amounts are too low to amass a sizeable pension. The International Labor Organization sets the minimum pension replacement rate (the percentage of a worker's pre-retirement income that their pension covers), for an

average earner with 30 years of contributions at 45%.³² Meaning that at a *minimum*, a pension should equal 45% of the pensioner's pre-retirement income. The Private Pension Unit of the Organization for Economic Cooperation and Development (OECD) pins an ideal minimum replacement rate of 60%. However, the AFP's mean replacement rate for a person at the median annual income is 37.7% of earnings for a male and 33.1% of earnings for a female.³³ The disparity in the average pensions between men and women is also more acute than the means alone indicate because Chilean women earn 67% of the lifetime earnings of men. The AFP does not, therefore, provide the minimum standard of living for the average Chilean as outlined by the United Nations ILO or the OECD.

Table 2 returns to the previous criteria to categorize the AFP. It is primarily a *defined contribution* system because benefits are heavily tied to contributions. There is, however, a modest, two-tier defined benefits "solidarity pillar". The lower tier is the *Pensión Básica Solidaria* ("Basic Solidarity Pension", PBS), which is a benefit granted to Chilean pensioners in the bottom six income deciles who do not have any savings with an AFP. The second tier is the *Aporte Previsional Solidario* ("Previsional Solidarity Contribution", APS), which is a government "top-up" for pensioners who have a minimal pension with their AFP.³⁴ The AFP is considered a *privatized* system because for-profit, private enterprises comprise most of its operation, such as the collection, management, and distribution of funds; the Chilean state acts as a regulatory agency and administers the solidarity pillar. The AFP is financed by *individual capitalization*. The frequency of

³² "International Labour Standards on Social Security." International Labour Organization.

³³ *Pensions at a Glance 2015: OECD and G20 Indicators*. Rep. Paris: OECD, 2015. Print.

³⁴ "Pensión Básica Solidaria de Vejez (PBS-Vejez)." *Safp.cl*. Superintendencia de Pensiones de Chile. Web. 05 Mar. 2017. <<http://www.safp.cl/portal/orientacion/580/w3-article-5784.html>>. The PBS is \$102,897 CLP, or about \$150, monthly. The government uses a formula to determine the APS for each pensioner, but it is available for pensioners whose pension is below \$304,062 CLP, or about \$450, monthly.

contributions, amount of contributions, risk preferences of workers, returns generated, and commissions paid by each worker to the AFP will affect the final pension amount. Lastly, participation in the AFP is *obligatory*. Theoretically, 100% of the Chilean labor force should be *enrolled* with an AFP—this is mandated by law.³⁵ Nevertheless, the theoretical maximum *contribution* rate is not equal to the enrollment rate of 100% when the economy is operating at the natural rate of unemployment of 5%.³⁶ When the Chilean economy is operating normally, under ideal conditions, one would expect 95% of the labor-force to be working and, therefore, a contribution rate of 95%.

Table 2: Classification of the AFP

Classification of the AFP	
Criterion:	Classification:
Stipulated Obligations	Defined Contribution (DC): Workers must contribute 10% of income per month. There is a two-tier defined benefit “solidarity pillar”.
Type of Administration	Private: Currently six for-profit corporations collect and invest workers’ contributions. The SAFP regulates the industry.
Method of Financing	Capitalization: The pensioner finances his own pension through the investment of his contributions. The contributions are not pooled when they are invested.
Participation Mandate	Obligatory: Workers are obligated to affiliate with the pension system and make contributions.

However, the *observed* contribution rate is 65% of the labor force.³⁷ Individuals do not make AFP contributions for a variety of reasons: 1) They simply may be too poor to afford to contribute. 2) They may avoid contributions if they are employed in the informal economy. There will be no official record of their employment, and thus no record that they are violating the law. The requirement of AFP contributions and other

³⁵ Edwards, p. 41. He argues that this is the case. He pins labor-force *enrollment* in AFPs at “almost 99%”

³⁶ Ibid. 37. The natural rate of unemployment is the hypothetical unemployment rate when aggregate production is at its long-run equilibrium.

³⁷ Mesa-Lago and Bertranou, p. 28

forms of taxation and regulation disincentivize certain workers or their employers from becoming a part of the official labor force. 3) They are “gaming” the system. By making sporadic contributions, or under-reporting their earnings, they may be able to qualify for certain government benefits that they otherwise would not qualify for.³⁸ 4) They are self-employed. At the outset of the system, self-employed workers were not obliged to affiliate, although they were encouraged to. Starting in 2012, self-employed workers had to affiliate and make contributions on the first 40% of their income, rising to 100% in 2014.³⁹ Therefore, the observed contribution rate in the years before 2014 will be much lower, as about one-third of the labor force was not required to affiliate or contribute. In the years after 2014, independent workers have been slow to adapt to the change in the law, with their participation rate hovering at 33% in 2015.⁴⁰

There have been three significant periods in terms of the level of concentration in the AFP. The initial period is 1981-1990, when the market was establishing itself. Because of the fragility of the Chilean economy at that time (there was a recession in 1982), “it was not a propitious period for the development of this type of market”.⁴¹ There were 12 AFPs from the inception of the system in 1981, through 1985. Five of those companies are among the six still operating today.⁴² The second phase was from 1991-1996. Beginning in 1991, the government took additional measures to promote competition in the AFP market by deregulating the sales tactics permitted by AFPs (increasing the number of salespersons firms could contract, reducing restrictions on

³⁸ The Previsional Solidarity Contribution was created partially to address workers in the gray economy and those who would game the system.

³⁹ “Trabajadores Independientes.” Superintendencia De Pensiones. Web. 3 Mar. 2017. <<http://www.safp.cl/portal/orientacion/580/w3-propertyvalue-9358.html>>.

⁴⁰ Mesa-Lago and Bertranou, p. 28

⁴¹ Vera, Marcela, and Alberto Mayol. “¿Es competitivo el mercado de las AFP’s?” (2015). Web. p. 2

⁴² Those five companies are: Cuprum, Habitat, Planvital, Provida, and Capital.

marketing, and permitting companies to offer sign-up bonuses for enrolling with an AFP—money, clothes-irons, televisions, etc.). By 1993, the number of firms in the industry rose to 22. But, 1995 was the first year with a significant number of mergers. By 1996, the number of firms diminished to 13.

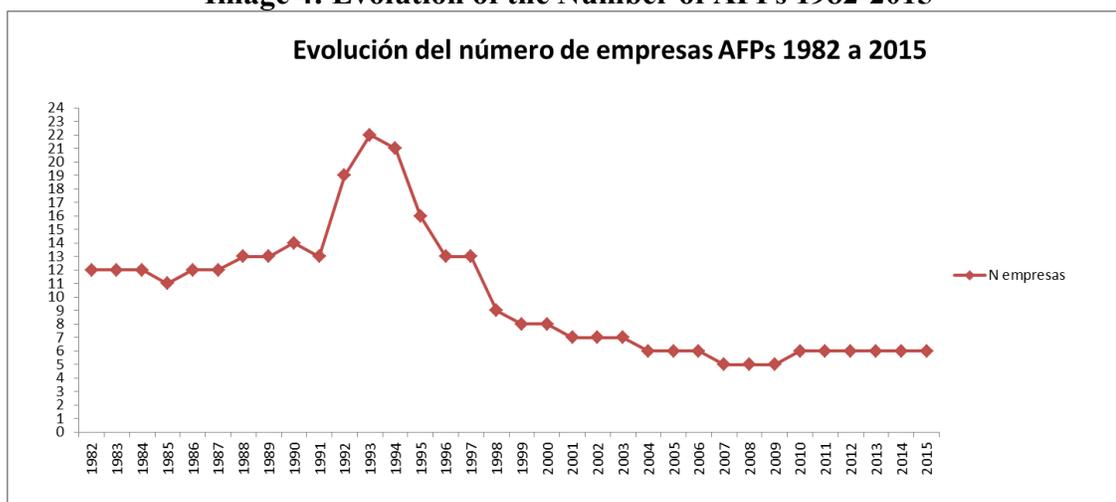
The final period is from 1997 to the present. While the earlier deregulatory measures did have a positive effect on the number of firms in the market, they did *not* result in reduced administrative costs and commissions. This is largely because, before 2002, each AFP could only offer the C fund, and there were regulations for both lack of profitability and profitability. AFPs that posted returns below 50% of the average across all companies had to make up the difference from an investment reserve funded by the managers. AFPs that posted profits above 50% of the average across all companies had to invest the excess profits in the same reserve. The result of the imposition of one fund per company and the regulations on lack of profitability and over-profitability resulted in each AFP offering “extremely similar” portfolios.⁴³ Thus, the only way companies differentiated themselves in practice was through aggressive marketing, sales tactics, and sign up bonuses. Commissions were high across the board, and they were not going towards market innovation or improving worker pensions. Therefore, in 1997, the SAFP retracted some of its deregulatory measures. The Superintendence banned companies from offering monetary incentives or gifts for enrolling in an AFP. It imposed a hiring freeze on all new sales people. It also constrained the number of times individuals could change AFPs to two times per year.⁴⁴ From 1997 to 2007 the number of AFPs declined from 13 to 5. A new company, AFP Modelo, entered the market in 2010. No AFP that

⁴³ Edwards, p. 44

⁴⁴ Vera and Mayol, p. 3

was created in the 1990s survived alone in the market, and there are currently half of the companies operating than when the system was created. Image 4 illustrates the changes in the number of AFPs over time.

Image 4: Evolution of the Number of AFPs 1982-2015⁴⁵



Summary of Chapter I

The purpose of social security systems is to protect workers from “the insecurities related to making a living through work”. The justification for the subset of social security that is pension provision is that elderly persons are owed some level of income to survive when they can no longer work, perhaps out of duty to our parents and grandparents, or, more selfishly, the reality that we will all be old one day. The historical Chilean pension system should be noted for its *severe insolvency* and *segmentation*. Multiple factors contributed to its insolvency, but overall it was due to the mismatch of low contributions with high payouts. The historical system was fundamentally segmented for different members of society; special interests had more generous pension regimes, while most Chileans did not. The AFP was instituted in part to address the solvency issues and to create a pension system that was structurally the same for all workers.

⁴⁵ Reproduced from Vera and Mayol, p. 2

CHAPTER II: METHODOLOGY AND LITERATURE REVIEW

Once again, I chose to analyze the aspect of market competitiveness in the AFP because of the variations in firm market share that were evident in the data from the Superintendence of the Administrators of Pension Funds. It is important then to explain how I will assess market competitiveness. I will use the Herfindahl-Hirschman Index (HHI), a measure of market concentration that the Chilean government itself uses to judge market competitiveness.

Methodology: The Herfindahl-Hirschman Index

The Herfindahl-Hirschman Index is calculated by summing the squares of the individual market shares of all firms in an industry. Expressed as a number from 0–10,000, or as a percent, the HHI reflects the overall concentration of a market. Since the HHI is composed from the *square* of the market shares of the firms, examination of it reveals that the HHI gives heavier weight to firms with large market share than those with small market share. This “*corresponds to the theoretical notion in economics that the greater the concentration of output in a small number of firms (a high HHI), the greater the likelihood that, other things equal, competition in a market will be weak*”.⁴⁶ In contrast, competition in a market with a low HHI is more likely to be vigorous. The HHI has a maximum bound of 10,000 when one firm controls all market share, $(100)^2 =$

⁴⁶ Rhoades, Stephen A. “The Herfindahl-Hirschman Index.” *Federal Reserve Bulletin* Mar. 1993: 188-89. Web.; emphasis added

10,000. The HHI has a lower bound that is asymptotic at 0; as the number of firms in an industry approaches infinity, the HHI approaches 0.

The Herfindahl-Hirschman Index has been the Department of Justice's standard for measuring market concentration since 1985. The Chilean government subsequently copied the U.S. standards. Both the Department of Justice and the *Fiscalía Nacional Económica* employ the same levels of scrutiny: markets with an HHI below 1,500 are considered "unconcentrated", markets with an HHI between 1,500 and 2,500 are considered "moderately concentrated", and markets with an HHI above 2,500 are considered "highly concentrated".⁴⁷ Mergers and acquisitions that increase the HHI by 100 points or more are also subject to scrutiny by the antitrust regulators. The Department of Justice remarks, however:

The purpose of these thresholds is not to provide a rigid screen to separate competitively benign mergers from anticompetitive ones, although high levels of concentration do raise concerns. Rather, they provide one way to identify some mergers unlikely to raise competitive concerns and some others for which it is particularly important to examine whether other competitive factors confirm, reinforce, or counteract the potentially harmful effects of increased concentration.⁴⁸

Or, while these are normative standards, they are still beneficial.

The following examples of calculating the HHI before and after a merger illustrate the use of this measure. Assume that there are four firms in a market. Firm A holds 40% of the market share, firm B holds 30% of the market share, firm C holds 20% of the market share, and firm D holds 10% of the market share. The sum of the squares of these values gives the HHI for the market:

$$40^2 + 30^2 + 20^2 + 10^2 = \mathbf{3,000}$$

⁴⁷ For the U.S. standards, see: United States. U.S. Department of Justice and the Federal Trade Commission. *Horizontal Merger Guidelines*. Washington D.C., 2015. Print.; For the (identical) Chilean standards, see Chile. Fiscalía Nacional Económica. *La guía interna para el análisis de operaciones de concentración horizontal*. By Felipe Irrazábal. Santiago, 2012. Print.

⁴⁸ DOJ, §5.3

The HHI of this market is, therefore, 3000.

Suppose that firm C acquires firm D. Their combined market share is 30%. The new market HHI is:

$$40^2 + 30^2 + 30^2 = \mathbf{3,400}$$

The merger, therefore, increased the HHI by 400 points.

Finally, consider if instead, firm A acquires firm D. Their combined market share is 50%.

In this scenario, the market HHI is:

$$50^2 + 30^2 + 20^2 = \mathbf{3,800}$$

This demonstrates the weight the Herfindahl-Hirschman Index gives to larger firms.

Although both cases were a 10% shift in the industry market share, the second case resulted in a larger Herfindahl-Hirschman Index.

When there are many firms in an industry, or when determining a firm's market share is difficult, it can be challenging to use the HHI to measure market concentration. This challenge is not present in the case of the AFP. The number of firms is six. The SAFP also mandates trimestral disclosures of AFP data, so the exact market share of each firm can be calculated. An attribute of the Herfindahl-Hirschman Index is that any HHI is a "numbers equivalent".⁴⁹ To obtain the HHI corresponding to a market with a given number of equal-sized firms, multiply the reciprocal of the number of firms by 10,000. This HHI is the minimum possible HHI for the market. For example, the HHI for a market of six equal-sized firms is:

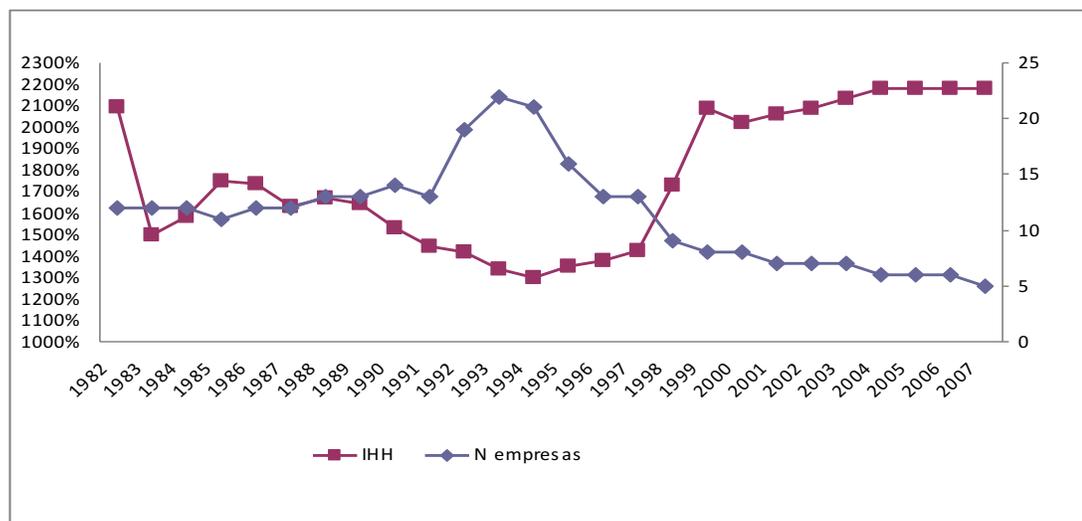
$$6^{-1} * 10,000 = \mathbf{1,667}.$$

⁴⁹ Calkins, Stephen. "The New Merger Guidelines and the Herfindahl-Hirschman Index." *California Law Review* 6th ser. 71.2 (1983): 402-29. Print. p. 404-406

Then, the theoretical HHI for a perfectly even distribution of market share in the AFP is 1,667. Further, each firm would have a market share of 16.67%. The six-firm HHI can never go lower than this threshold. This is important when considering the FNE’s antitrust standards. If there are only six firms, by the FNE’s measures of market concentration, the AFP will be considered *at least* “moderately concentrated” *no matter the distribution of market share*. However, a strict adherence to the FNE’s guidelines will not be as useful for my analysis because the *AFP is an inherently concentrated industry*.

As a final aide to understanding the HHI, Image 5 is a chart from the University of Santiago economist Marcela Vera and the sociologist Alberto Mayol’s 2015 paper “Is the AFP Market Competitive?”, showing the evolution of the number of AFPs and the HHI from 1982-2007. The blue line represents the number of AFPs. The maroon line represents the Herfindahl-Hirschman Index. Notice their inverse relationship.

Image 5: Evolution of the Number of AFPs and the National HHI 1982-2007⁵⁰



⁵⁰ Reproduced from Vera and Mayol, p. 12

Scholarship on the Market Competitiveness of the AFP

The AFP is significantly distorted from a normal market, which affects its level of competition. Dr. Salvador Valdés Prieto, a professor of economics at the Catholic University of Chile who received his Ph.D. in economics from MIT, examined the competitiveness of the AFP market in his 2005 paper “Alternatives to Increase the Competition Between the AFPs”. He cites *the behavior of the demand function for the AFP market* and *economies of scale* as factors that reduce the level of competitiveness. The demand function of consumers for an AFP is highly price inelastic. This comes fundamentally from the fact that “although the affiliates are obligated by the state to buy services from the AFPs, they are still free to not *interest* themselves with them.”⁵¹

The first reason for an inelastic demand function that Valdés Prieto highlights is the systemic lack of financial literacy on the part of affiliates. He attributes this to the complexity of the AFP system. He underscores the fact that, in 2005, only 12% of AFP affiliates voluntarily purchased other mutual funds. The lack of financial literacy is even more starkly illustrated by the economist Alberto Arenas de Mesa (Minister of Finance from 2006-2010 and 2014-2015) in “The Chilean Pension Reform Turns 25: Lessons from the Social Protection Survey”. Arenas de Mesa analyzes the *Encuesta de Previsión Social* (EPS, “Social Provision Survey”) from 2002 and 2004, a longitudinal survey from a sample of “approximately 8.1 million current and former affiliates of the Chilean old-age system... [containing] data on 17,246 individuals affiliated with the old or the new retirement system for at least 1 month at any time during 1981–2001.”⁵² Arenas de Mesa reports that only 28% of respondents knew the mandatory contribution rate (10% of

⁵¹ Valdés Prieto, Salvador. "Para aumentar la competencia entre las AFP." Santiago. *Estudios Públicos* 98 (2005): 87-142. Print.

⁵² Arenas de Mesa 2000, p. 34

income), 10% knew how pension funds were invested, and “fewer than 2 percent of the respondents” knew the commission they paid to their AFP!⁵³

Other reasons that Valdés Prieto cites as contributing to the inelasticity of the demand function are: 2) *The tendency for customers to stay with the first AFP they affiliate with*—there is high inertia of customers. 3) *The fragmentation of commissions*. Commissions are paid monthly, as opposed to yearly, so there is a tendency to avoid comprehending the total annual commission paid. The annual differences in savings produced from switching from a high-commission AFP to a low-commission AFP are also less obvious. 4) *For those with employers, AFP contributions and commissions are deducted automatically from their paycheck* (in the same way that Social Security tax is automatically deducted from paychecks in the United States). This is done to lower the administrative costs of the AFPs, but this also lowers the commissions price-sensitivity of workers.

The second major factor contributing to reduced competition that Valdés Prieto discusses is the economies of scale of the AFP system. By his econometric analysis, the minimum efficient scale for an AFP “as a whole” is 2,000,000 affiliates and 1,000,000 contributors. Meanwhile, if only “pure production” costs are considered (eliminating the cost of marketing, for example), the minimum efficient scale falls to 300,000 affiliates and 150,000 contributors. Given that the size of the Chilean labor force as reported by the Central Bank of Chile in January 2017 (the most recent date available) was 8.8 million people, this would suggest that the market can only sustain four AFPs at the low end, and twenty-nine AFPs as a theoretical maximum. A December 2014 report conducted by the

⁵³ Arenas de Mesa 2000, p. 47, emphasis added

office of the Subsecretary for Social Provision found that a 2008 reform has reduced some of the barriers to entry. The reform, known as *licitación* (licitation), mandates that all new AFP affiliates enroll for two years in the AFP that charges the lowest commission. In effect, this created an auction mechanism where AFPs bid for customers by offering the lowest commission. This allows smaller firms to gain market share relatively quickly by winning the licitation. From 2009-2013, the average commission fell and the national HHI of the AFP in terms of affiliates fell from 2,886 to 2,315.⁵⁴

Scholarship on Chilean Regional Development

Regionalism is totally neglected in academic studies and policy discussions of the AFP. For example, the seminal 2015 Final Report from the Presidential Advisory Commission on the Pension System, a 247-page document designed to act as the lodestar for the administration of President Michelle Bachelet with regards to the pension system, conducts no regional analysis.⁵⁵ Nor does the official plan for a new pension system proposed by *No Más AFP* (“No More AFP”), the chief organization for opposition to the AFP.⁵⁶ This may be the case because issues such as increasing pension amounts and increasing gender equity are more salient politically. It also may be a result of the population concentration around Santiago. Domestic policy in Chile is often accused of bias towards the capitol. Finally, international scholarship may also be less concerned with or less aware of regional differentials. Reports conducted by the World Bank, the United Nations Economic Commission for Latin America and the Caribbean (CEPAL),

⁵⁴ Chile. Subsecretaría De Previsión Social. *Barreras de entrada, concentración y competencia en el mercado de las AFP*. By Marcos Barraza Gómez. Santiago: Dirección De Estudios Previsionales, 2014. Print. p. 9

⁵⁵ Chile. Comisión Asesora Presidencial Sobre El Sistema De Pensiones. *Informe Final*. By David Bravo. 1st ed. Santiago, 2015. Print.

⁵⁶ *Nuevo sistema de pensiones para Chile*. Santiago: Coordinadora Nacional De Trabajadores No Más AFP, 2016. Print.

and the Social Security Administration tend to focus on the macroeconomic effects of the AFP and its comparability to other pension systems.

One of the few academic analyses which noted regional differences in the AFP is Arenas de Mesa 2000, “Provisional Coverage in Chile: Lessons and Challenges of the Pension System Administered by the Private Sector”. He makes two important points. First, when he conducted the study, only Regions II, XII, and RM had coverage rates above the national average. Meanwhile, he calls the coverage rates of Regions IV, VII, IX, and X “persistently” poor. Second, he attributes the poor coverage rates to the predominance of agriculture in these regions. He argues that the lack of formalization in agriculture results in poor coverage rates.⁵⁷

Arenas de Mesa’s findings coincide well with the analysis in the 2010 paper “Concentration and Growth in Chile: An Ignored Negative Relationship” by Miguel Atienza and Patricio Aroca, professors of economics at the Catholic University of the North. While this was not a study on the AFP, the researchers find that from 1990-2010 regional inequality has increased in Chile. They attribute some of the increase in regional inequality to inter-regional trade flows and labor mobility. They find that Regions I, II, III, X, XI, and XII are net recipients of workers, while Regions IV-IX and RM are net donors of workers, meaning that individuals in the donor regions are moving to the recipient regions in search of work.⁵⁸ They remark: “These results reveal the need to incorporate explicitly and actively the ‘regional problem’ in the national development

⁵⁷ Arenas de Mesa 2000, p. 35

⁵⁸ Atienza, Miguel, and Patricio Aroca. “Concentración y crecimiento en Chile: Una relación negativa Ignorada.” *Revista Latinoamericana de Estudios Urbano Regionales* 38.114 (2012): 257-77. Print. p. 268; Neither Arenas de Mesa 2000 nor Atienza and Aroca analyze Regions XIV and XV because they were created in 2007.

strategy, not only as an equity problem, but also as part of the policies oriented to improve the efficiency of the Chilean economy.”⁵⁹

Summary of Chapter II

The first subsection of Chapter II “Methodology: The Herfindahl-Hirschman Index” explained the HHI and why it is a useful measure. Next, Chapter II discussed scholarly literature relevant to the understanding of my analysis in Chapter III. The subsection “Scholarship on the Market Competitiveness of the AFP” comprised academic research on aspects of the AFP that affect market competitiveness. It is important to note that because participation in the AFP is mandatory, yet financial literacy is low, the AFP exhibits significant distortions from a normal market. Finally, the subsection “Scholarship on Chilean Regional Development” highlighted the deficit of regional analyses on the AFP, but included some studies that support the assertion that regional differences in development are affecting the AFP.

⁵⁹ Atienza and Aroca, p. 257

CHAPTER III: ANALYSIS OF MARKET COMPETITION IN THE AFP

Table 3 contains the national market shares and corresponding HHI in the AFP, as of December 2016. The data come from the Trimestral Statistical Report of Affiliates and Contributors (“*Informe Estadístico Trimestral de Afiliados y Cotizantes*”) and were released on February 10, 2017. I calculate market concentration by two different measures: the share of *affiliates* and the share of *contributors*. The share of affiliates reflects each AFP’s share of persons who have *ever* enrolled with an AFP. This includes those currently in the labor force, as well as people who have retired, have given up work but enrolled with an AFP at some point, and have opened accounts voluntarily (such as a parent might for a child, for example). The share of contributors is each AFP’s share of the subset of affiliates who made contributions in December 2016 on wages they earned in November 2016.

Table 3: AFP National Market Concentration December 2016

Measure:	AFP Market Share						HHI
	Capital	Cuprum	Habitat	Modelo	Planvital	Provida	
Affiliates	16.8%	6.1%	20.0%	14.8%	11.4%	30.9%	2,022
Contributors	17.2%	8.1%	21.6%	12.9%	10.4%	29.7%	1,988
Contrib. % of Affiliates	102.4%	132.6%	108.0%	87.7%	91.0%	96.3%	98.3%

AFPs make their profits through commissions on affiliate contributions and through a commission on the amassed balance upon retirement. The fixed costs of AFPs

are high, while the variable costs are low.⁶⁰ Affiliates who do not contribute and do not have a high account balance represent fixed costs to AFPs. Because certain workers are more likely to be contributors than others, companies will direct their resources towards attracting customers who will be continuous contributors. In addition, the affiliation rate, as previously noted, is about 100% of the labor force, while the average monthly contribution rate is 65%. Therefore, the market share in terms of *contributors* is likely the more accurate reflection of how companies are prioritizing themselves in the market. The market share in terms of affiliates is still useful for comparative reasons. The last row “Contrib. % of Affiliates” compares each AFPs market share in terms of contributors to its market share in terms of affiliates. For example, AFP Cuprum’s market share in terms of contributors is 132.6% its market share in terms of affiliates. Meanwhile, AFP Modelo’s market share in terms of contributors is 87.7% its market share in terms of affiliates. More simply, AFP Cuprum has a 32.6% *larger* market share in terms of contributors than in terms of affiliates, while AFP Modelo has a 12.3% *smaller* market share in terms of contributors than in terms of affiliates.

The Herfindahl-Hirschman Indices as calculated by both share of affiliates and share of contributors are close, with the contributors HHI 1.7% smaller than the affiliates HHI. To qualify the magnitude of the HHI, I compare it to the theoretical minimum HHI for a six-firm market—1,667—which is equivalent to a no concentration scenario in which all firms have equal market shares of 16.7%. The national HHI as calculated by share of affiliates, 2,022, is 21.3% bigger than the minimum possible HHI. The national HHI as calculated by share of contributors, 1,988, is 19.3% bigger than the minimum

⁶⁰ Barraza Gómez, 6

possible HHI. By the DOJ and FNE’s standards, these HHI indicate markets that are “moderately concentrated” and would merit heightened scrutiny. The differences between the affiliate and contributor market shares is illuminating. AFPs Capital, Cuprum, and Habitat all have greater market share as measured by contributors, while AFPs Modelo, Planvital, and Provida have greater market share as measured by affiliates. This indicates that AFPs Capital, Habitat, and especially Cuprum are adept at profiling and attracting affiliates who are likely to be contributors, as well as profiling and avoiding affiliates who are not likely to be contributors.

The State of AFP Market Concentration by Region:

The December 2016 divisions in the national market only explain part of the level of concentration in the AFP system. At the regional level, there are substantial differentials in market concentration as measured by the HHI. Previous studies that have only calculated the national HHI have neglected to notice these differentials. The regions are in geographic order from north to south.

Table 4: Overview of AFP Market Concentration by Region

Region	Affiliates HHI	Contributors HHI	Contributors HHI % of Affiliates HHI	Affiliates HHI Increase from Min.	Contributors HHI Increase from Min.
XV	2081	2015	96.9%	24.8%	20.9%
I	1821	1768	97.1%	9.2%	6.0%
II	1800	1787	99.3%	8.0%	7.2%
III	2349	2236	95.2%	40.9%	34.1%
IV	2455	2294	93.5%	47.3%	37.6%
V	2138	2106	98.5%	28.2%	26.3%
RM	1903	1894	99.5%	14.1%	13.6%
VI	2322	2270	97.8%	39.3%	36.2%
VII	2486	2442	98.2%	49.1%	46.5%
VIII	2159	2163	100.2%	29.5%	29.7%
IX	2386	2323	97.4%	43.1%	39.3%
XIV	2161	2156	99.8%	29.6%	29.3%
X	2134	2074	97.2%	28.0%	24.4%
XI	2379	2301	96.7%	42.7%	38.0%
XII	1906	1892	99.3%	14.3%	13.5%
National	2,022	1,988	98.3%	121.3%	119.3%

As seen in Table 4, by both share of affiliates and share of contributors, the regional HHI is *lower* than the national HHI in regions I, II, RM, and XII. In all other regions, the regional HHI is *higher* than the national HHI. That the regional HHI is lower than the national HHI in Regions I, II, RM, and XII is not surprising, given the geographic introduction to Chile in Chapter I. In this case, the Herfindahl-Hirschman Indices mirror the level of regional GDP per capita. Regions I and II are the centers of Chile's mining activity and thus have high regional GDP. The harsh landscape of the Atacama Desert makes living conditions tough, and so Regions I and II have low populations as well, further contributing to high regional GDP per capita. As measured by share of affiliates, Region II has the lowest HHI and Region I has the second lowest HHI. As measured by share of contributors, Region I has the lowest HHI and Region II has the second lowest HHI. RM (Santiago) is the most developed region and has high regional GDP. Despite containing 40% of the population of Chile, it still has high regional GDP per capita. Finally, Region XII has a smaller regional economy on an absolute scale than that of Regions I, II, and RM, but because its population is so small, it has a relatively high regional GDP per capita as well. Most disconcerting is the case of Region VII, with an affiliate HHI of 2,486 (49.1% above the minimum) and a contributor HHI of 2,442 (46.5% above the minimum). This is close to the DOJ and FNE marker of 2,500 for "highly concentrated" markets—a level of concentration that is acceptable only in rare cases. Considering that the HHI of Region I as calculated by share of contributors is only 6% larger than the minimum possible HHI, the Region VII HHI *is* unacceptable and there is much that AFPs and the government could do to increase market competition there.

In every region other than Region VIII, the HHI as calculated by share of contributors is lower than the HHI as calculated by share of affiliates, supporting the assertion that certain types of customers are tacitly avoided. This is even more clearly illustrated in Table 5. The table contains the market shares of each AFP in each region which were used to derive the Herfindahl-Hirschman Indices. The table is colored such that the smallest market share in the system is colored dark red (in both the case of affiliates and contributors, AFP Cuprum in Region VII at 3.8%, and 5.2%, respectively), the middle market share is colored yellow (the median market share is 14.03% for affiliates and 14.53% for contributors), and the greatest market share is colored dark green (in the case of affiliates, AFP Provida in Region IV at 41.7%, and in the case of contributors, AFP Provida in Region VII at 40.1%). The colors of the shares change progressively between those levels. This coloring makes it more intuitive to visualize conclusions that may be drawn about the AFPs and regions.

Table 5: Derivation of AFP Market Concentration by Region

AFFILIATES (December 2016)								
Region	AFP Market Share (%)						Regional HHI	Number Affiliates
	Capital	Cuprum	Habitat	Modelo	Planvital	Provida		
XV	16.0%	5.5%	31.4%	15.5%	9.9%	21.6%	2,081	188,102
I	18.6%	8.5%	20.0%	16.5%	12.4%	24.0%	1,821	366,956
II	15.0%	13.7%	17.6%	16.1%	11.4%	26.3%	1,800	170,536
III	13.9%	10.9%	13.4%	12.4%	9.1%	40.2%	2,349	378,474
IV	12.5%	6.5%	14.6%	12.3%	12.4%	41.7%	2,455	945,854
V	19.0%	5.6%	19.3%	12.4%	10.4%	33.3%	2,138	488,448
RM	17.5%	6.4%	21.9%	17.2%	11.6%	25.4%	1,903	540,631
VI	14.1%	5.4%	13.4%	11.1%	17.4%	38.6%	2,322	1,003,292
VII	18.6%	3.8%	11.7%	11.0%	13.9%	40.9%	2,486	458,394
VIII	17.2%	5.7%	21.5%	12.5%	9.7%	33.5%	2,159	453,663
IX	15.9%	4.4%	16.7%	13.6%	10.0%	39.4%	2,386	59,883
XIV	17.6%	3.8%	24.2%	12.6%	10.5%	31.4%	2,161	104,945
X	18.4%	5.4%	18.1%	11.9%	12.4%	33.8%	2,134	4,477,431
XI	23.2%	4.1%	11.4%	10.7%	13.1%	37.6%	2,379	185,371
XII	20.5%	6.7%	21.6%	10.9%	15.4%	24.9%	1,906	119,420
National*	16.8%	6.1%	20.0%	14.8%	11.4%	30.9%	2,022	10,178,437
CONTRIBUTORS (December 2016)								
Region	AFP Market Share (%)						Regional HHI	Number Contributors
	Capital	Cuprum	Habitat	Modelo	Planvital	Provida		
XV	16.1%	7.9%	30.8%	13.7%	10.2%	21.3%	2,015	59,048
I	18.3%	11.8%	20.8%	14.2%	12.4%	22.5%	1,768	90,702
II	15.9%	17.7%	18.8%	12.9%	10.3%	24.4%	1,787	191,196
III	15.4%	15.2%	14.5%	9.6%	7.8%	37.4%	2,236	87,346
IV	13.8%	9.0%	16.2%	10.1%	12.0%	38.9%	2,294	188,002
V	18.7%	7.3%	21.4%	11.0%	9.5%	32.2%	2,106	490,803
RM	17.5%	8.1%	24.0%	15.6%	10.4%	24.4%	1,894	2,377,863
VI	14.5%	7.2%	15.0%	9.4%	16.0%	37.9%	2,270	268,937
VII	19.5%	5.2%	13.2%	9.0%	12.9%	40.1%	2,442	287,003
VIII	17.2%	7.6%	23.4%	10.8%	8.1%	32.9%	2,163	539,691
IX	16.0%	6.4%	18.9%	11.8%	8.7%	38.1%	2,323	222,233
XIV	17.2%	5.5%	25.4%	10.3%	10.4%	31.2%	2,156	92,628
X	19.5%	7.3%	19.8%	10.3%	11.1%	31.9%	2,074	227,401
XI	25.7%	5.6%	13.8%	9.2%	10.8%	34.9%	2,301	29,129
XII	22.4%	9.0%	22.4%	9.6%	13.5%	23.1%	1,892	54,770
National*	17.2%	8.1%	21.6%	12.9%	10.4%	29.7%	1,988	5,284,337

*237,037 affiliates and 77,585 contributors did not indicate their region.

In Table 5, the eye is immediately drawn to the market shares of AFP Cuprum in Regions II and III (which in both the case of affiliates and contributors have its 1st and 2nd highest market shares). While in the other regions, AFP Cuprum's market share is approximately the same or less than its national market share, in these regions, by share of affiliates, it is 2.2 and 1.8 times its national market share, and, by share of contributors, it is 2.2 and 1.9 times its national market share. Meanwhile, in both Region XIV, its

worst region by share of affiliates, and in Region VII, its worst region by share of contributors, its market share is 0.6 times its national market share. AFP Cuprum also has the smallest market share in every region other than Regions II and III, by both calculations of market share. Although AFPs by law must *operate* at a national level and accept all workers who wish to affiliate with them, it does not mean that they will *devote* the same resources nationally to their acquisition and service. Per its own Annual Review, AFP Cuprum is “closely linked to copper mining”.⁶¹ “Cuprum” is Latin for copper. AFP Cuprum was founded in 1981 by the *Asociación Gremial Nacional de Supervisores del Cobre* (“National Trade Union of Copper Supervisors”, ANSCO), the trade union for management in the copper industry. These data, as well as its foundation and name, suggest that AFP Cuprum focuses its business where specifically copper mining is important. Workers in the copper mining industry or who live in those regions with a significant presence of copper mining, therefore, may have better outcomes in the pension system and the greater social security system.

In Table 5, bands of color are also instructive. The color scheme helps to visualize the relative *equality* of market share in Regions I and II. Regions I and II are both more yellow across the table than the other regions. On the other hand, the color scheme helps to indicate the *lack of equality* in other regions. Regions with high Herfindahl-Hirschman Indices such as IV, VII, IX, and XI have greater variation in their colors. Finally, I wish to call attention to AFP Modelo’s market share in RM. In both tables, this region has its highest market share. I would surmise that this is because AFP Modelo won the licitation for 2010-2012 and 2012-2014. This means that Modelo offered the lowest commission,

⁶¹ Silva Bafalluy, Ernesto. *Memoria anual y los estados financieros de AFP Cuprum S.A.* Rep. Santiago, 2006. Print. p. 19

so all new affiliates in those time periods had to register and stay affiliated with AFP Modelo for at least two years from the date of their affiliation. Since RM, the Santiago metropolitan area, is by far the most populous region, AFP Modelo would see the largest increase in its market share here. Since this reform has resulted in the lowest commission rate for each subsequent period of its implementation (from 2010 onwards), it may be an efficient way to “redistribute” market share.

The State of AFP Market Concentration by Income Tax Bracket:

Previous studies have also neglected to notice the differentials that are present when market concentration is calculated at the level of different income tax brackets. Table 6 also contains data from the December 2016 Trimestral Statistical Report of Affiliates and Contributors. This time, market concentration at different income levels is calculated—meaning, each income level is treated as if it were a distinct market, such as a region. For example, the first row in Table 6 contains information on AFP contributors in December 2016 whose monthly income was less than 20-thousand pesos. In this case, 20,221 contributors—0.4% of all contributors—fell in this category. 12.7% contributed to AFP Capital, 1.9% contributed to AFP Cuprum, 14.0% contributed to AFP Habitat, 20.6% contributed to AFP Modelo, 19.3% contributed to AFP Planvital, and 31.6% contributed to AFP Provida. Thus, the HHI for this income tax bracket is 2,152—or 29.1% greater than the minimum possible HHI of 1,667. Since the median monthly income of all Chilean workers is \$300,000 Chilean pesos (roughly \$450 U.S. dollars), while the median monthly income of AFP contributors is about \$500,000 Chilean pesos (roughly \$750 U.S. dollars), AFP contributors are wealthier on average. The SAFP only collects data for different income tax brackets in terms of contributors, so there is no comparison that can be made for market share of affiliates.

Table 6: AFP Market Concentration by Income Tax Bracket

Income Tax Bracket (Thousands of Pesos)	Number of Contrib.	Running Total Contrib.	AFP Market Share (%)						HHI	Increase from Min. HHI
			Capital	Cuprum	Habitat	Modelo	Planvital	Provida		
< 20	20,221	0.4%	12.7%	1.9%	14.0%	20.6%	19.3%	31.6%	2,152	29.1%
[20 – 40)	33,239	1.0%	12.2%	1.8%	15.4%	19.6%	18.2%	32.9%	2,182	30.9%
[40 – 60)	32,351	1.6%	12.2%	2.1%	15.3%	18.6%	18.0%	33.7%	2,197	31.8%
[60 – 100)	77,280	3.1%	12.8%	1.9%	15.4%	18.7%	17.1%	34.1%	2,209	32.5%
[100 – 150)	148,498	5.9%	13.5%	1.9%	15.6%	16.3%	16.2%	36.4%	2,286	37.1%
[150 – 200)	135,000	8.5%	13.0%	1.9%	15.5%	19.6%	18.3%	31.7%	2,139	28.3%
[200 – 250)	138,649	11.1%	13.8%	1.8%	15.5%	20.0%	17.3%	31.5%	2,129	27.7%
[250 – 300)	462,264	19.8%	16.5%	2.6%	17.3%	20.8%	12.1%	38.7%	2,387	43.2%
[300 – 350)*	507,741	29.4%	15.0%	2.1%	17.8%	14.8%	14.1%	36.3%	2,279	36.7%
[350 – 400)	350,218	36.1%	15.8%	2.3%	18.6%	16.1%	13.2%	34.0%	2,192	31.5%
[400 – 450)	303,427	41.8%	16.5%	2.5%	19.5%	16.1%	11.7%	33.7%	2,192	31.5%
[450 – 500)	284,213	47.2%	17.2%	3.0%	20.8%	14.9%	10.7%	33.4%	2,190	31.4%
[500 – 550)**	246,406	51.8%	17.9%	3.1%	21.3%	14.3%	10.0%	33.4%	2,202	32.1%
[550 – 600)	219,497	56.0%	18.3%	3.8%	22.9%	13.0%	8.8%	33.2%	2,223	33.4%
[600 – 650)	208,823	59.9%	19.0%	4.2%	22.6%	13.0%	9.3%	31.9%	2,163	29.7%
[650 – 700)	171,866	63.2%	18.9%	5.0%	24.2%	12.1%	8.2%	31.6%	2,180	30.8%
[700 – 750)	157,849	66.2%	19.2%	5.5%	24.6%	11.8%	8.1%	30.8%	2,155	29.3%
[750 – 800)	140,414	68.8%	19.5%	6.4%	25.1%	11.5%	7.9%	29.6%	2,122	27.3%
[800 – 850)	125,084	71.2%	19.4%	7.2%	25.9%	10.8%	7.5%	29.1%	2,123	27.4%
[850 – 900)	113,959	73.4%	19.5%	8.5%	25.8%	11.0%	7.6%	27.7%	2,061	23.7%
[900 – 950)	98,364	75.2%	19.4%	9.5%	26.2%	10.3%	7.3%	27.3%	2,056	23.3%
[950 – 1,000)	93,024	77.0%	19.6%	11.0%	25.9%	10.5%	7.4%	25.7%	1,998	19.9%
[1,000 – 1,050)	76,650	78.4%	19.6%	11.8%	26.0%	10.0%	7.1%	25.5%	1,999	19.9%
[1,050 – 1,100)	68,494	79.7%	19.8%	12.8%	26.7%	9.6%	6.8%	24.4%	1,997	19.8%
[1,100 – 1,150)	65,307	81.0%	19.5%	14.1%	26.2%	9.7%	7.3%	23.2%	1,950	17.0%
[1,150 – 1,200)	57,820	82.1%	19.6%	15.4%	26.2%	9.4%	6.8%	22.6%	1,954	17.2%
[1,200 – 1,250)	50,823	83.0%	19.8%	15.5%	25.9%	9.6%	7.1%	22.1%	1,933	16.0%
[1,250 – 1,300)	51,485	84.0%	19.5%	17.1%	26.7%	9.8%	6.7%	20.2%	1,934	16.0%
[1,300 – 1,350)	42,826	84.8%	20.0%	17.6%	26.3%	8.9%	6.5%	20.7%	1,951	17.0%
[1,350 – 1,400)	42,852	85.6%	19.0%	18.8%	26.9%	9.6%	6.6%	19.0%	1,938	16.2%
[1,400 – 1,450)	36,805	86.3%	19.4%	19.3%	26.9%	9.0%	6.5%	18.9%	1,954	17.2%
[1,450 – 1,500)	37,074	87.0%	19.2%	20.3%	25.8%	9.5%	7.1%	18.1%	1,916	14.9%
[1,500 – 1,550)	35,965	87.7%	19.1%	21.4%	26.8%	8.9%	5.9%	17.9%	1,975	18.5%
[1,550 – 1,600)	33,018	88.3%	18.6%	21.9%	25.5%	9.7%	7.3%	17.0%	1,912	14.7%
[1,600 – 1,650)	31,743	88.9%	18.6%	22.4%	26.4%	9.2%	6.5%	17.0%	1,957	17.4%
[1,650 – 1,700)	27,549	89.4%	18.4%	23.5%	26.3%	9.4%	6.1%	16.3%	1,974	18.4%
[1,700 – 1,750)	25,770	89.9%	18.6%	23.8%	26.5%	8.9%	5.7%	16.5%	2,000	20.0%
[1,750 – 1,800)	26,501	90.4%	18.3%	24.3%	26.3%	8.9%	6.0%	16.2%	1,995	19.7%
[1,800 – 1,850)	23,501	90.9%	18.3%	25.3%	26.2%	8.5%	5.8%	15.9%	2,020	21.2%
[1,850 – 1,900)	23,305	91.3%	18.3%	25.2%	25.7%	9.4%	5.7%	15.6%	1,998	19.9%
[1,900 – 1,950)	27,602	91.8%	18.7%	26.6%	27.1%	8.0%	5.2%	14.4%	2,089	25.3%
≥ 1950	430,860	100.0%	17.9%	32.1%	26.6%	6.9%	4.3%	12.1%	2,275	36.5%
National	5,284,337	100%	17.22%	8.11%	21.62%	12.95%	10.38%	29.72%	1,988	19.3%
*300 thousand pesos is the median monthly income of all Chilean workers (roughly \$450 U.S. dollars).										
**About 500 thousand pesos is the median monthly income of AFP contributors (roughly \$750 U.S. dollars).										

In Table 6, the income tax brackets from [1,100 – 1,700) thousand pesos monthly, or about 3.5–5.2 times the median monthly income, have HHI *below* the national HHI.

All other income tax brackets have HHI *higher* than the national HHI. The market is more concentrated at the lowest income levels, is the most concentrated near the median monthly income, becomes less concentrated as the share of income increases, and finally at greater than or equal to \$1,950 thousand pesos monthly—about 6 times the median

monthly income, the highest level provided—the market becomes more concentrated again. It should be noted that there is more concentration when each income tax bracket is defined as its own market compared with the market concentration in each region. The income tax bracket that is least concentrated is the bracket for persons with a monthly income from [1,550 – 1,600) thousand pesos—more than five times the median monthly income. The HHI for this income tax bracket is 1,912—14.7% greater than the minimum possible HHI. Meanwhile, the least concentrated regional market is the market for contributors in Region I, with an HHI of 1,768—6.0% greater than the minimum possible HHI.

The high market concentration at lower income levels and the median income is alarming, given the share of the population of contributors that these income levels represent. The monthly income tax bracket of [250 – 300) thousand pesos is the most concentrated and contains 8.7% of the population. The median monthly income bracket is the third most concentrated and contains 9.6% of the population. Yet, the least concentrated income tax bracket of [1,550 – 1,600) thousand pesos contains .6% of the population. Moreover, the poorest 79.7% of income tax brackets have HHI that are *above* the national HHI. Viewed in another way, most of the population is exposed to a more concentrated market, while about 10% of the richest income tax brackets are exposed to a less concentrated market. Therefore, the market for the contributions of the poorest 79.7% of Chileans is less competitive than the market for the contributions of the richest Chileans.

The market concentration by income tax bracket also bolsters the assertion that AFPs tacitly avoid certain customers and seek others. AFP Cuprum has an anemic share of customers in lower income tax brackets. From the income tax brackets of (0 – 850)

thousand pesos per month, or 0 to about 2.8 times the median income, AFP Cuprum's market share is lower than its national market share and is lower than every other AFP's market share in each respective bracket. AFP Cuprum does not have the largest market share in any income tax bracket, save for the highest bracket for which there are data, the bracket of greater than or equal to 1,950 thousand pesos per month—more than 6 times the median monthly income and greater. In contrast, AFP Capital has much more constant market share in all income tax brackets. AFP Habitat's market share increases with income tax bracket, but it does not have as much of a deficit with lower income tax brackets as AFP Cuprum. AFPs Modelo and Planvital have their highest market shares in the bottom income tax brackets. This is likely due to Modelo's winning the licitation from 2010–2014, and Planvital's winning from 2014–2018. All new AFP enrollees in these time periods have gone to those AFPs. As these are first-time workers, they disproportionately are a part of the lowest income tax brackets. Finally, AFP Provida experiences an opposite change in market share from AFP Habitat. AFP Provida comparably dominates the lowest income tax brackets, and loses market share as income increases. This is interesting also due to the licitation. Before 2010, AFP Provida must have had an especially large share of the contributors in the bottom income tax brackets, given that for now seven years, new affiliates have not been able to enroll with AFP Provida.

It is necessary to concede that when considering different income levels in a normal market, the different commissions charged would be important in the selection of an AFP. The commissions until January 1st, 2018 are as follows:

Table 7: AFP Commissions Structure

Commission Charged:		
AFP	On Contributions	On Final Balance
Capital	1.44%	1.25%
Cuprum	1.48%	1.25%
Habitat	1.27%	0.95%
Modelo	0.77%	1.20%
Planvital	0.41%	1.25%
Provida	1.54%	1.25%
Average	1.15%	1.19%

But the AFP is not a normal market! The AFP is a complex intersection of the Chilean social security and financial systems in which all Chileans are *forced* to participate. This creates the huge distortions from a healthy market that Valdés Prieto and other researchers have observed. The returns posted by each AFP have historically been similar, and in Arenas de Mesa’s study, only 2% of AFP affiliates knew the commission they paid to their AFP. Thus, workers are selecting their AFPs less so based on returns and commissions and more so based on other factors. The commissions data overall may *support* the argument that AFPs tacitly discriminate against some customers. Cuprum charges the second highest monthly commission in the system, which may contribute to its poor performance with lower income tax brackets. However, Capital’s monthly commission of 1.44% is only .028 times smaller than Cuprum’s commission of 1.48%, yet it has 4–5 times higher market share in all the lower income tax brackets. Most astoundingly, AFP Provida charges the highest monthly commission in the system, but it dominates the market for the lowest income individuals. Hence, it can be concluded that

AFP Capital targets all customers more evenly, while AFP Cuprum targets the richest customers and AFP Provida targets the poorest customers. Since AFP Cuprum averaged 1st place while AFP Provida averaged 5th place in the Quality of Service to Affiliate Index,⁶² combined with the fact that AFP Provida charges the highest commission rates, AFP Provida's success with poorer Chileans is not due to a specialization in their favor but some other factor.

Conclusions

By providing for pensions in a commissions-based market, the Administrators of Pension Funds does not incentivize pension providers to evenly target all Chileans, but rather to target the wealthiest Chileans. In the AFP, the wealthiest regions in Chile have the lowest concentration of market share, and the highest income tax brackets have the lowest concentration of market share. This indicates that competition in the AFP is most vigorous in wealthy regions and for wealthy Chileans. I assert that these differentials in competition are not merely descriptive, but also self-reinforcing. Competition may influence the rate at which workers make their monthly contributions. Consider the following feedback loops: In more competitive regions, one would expect there to be more advertising related to the pension system, more AFP staff, and more AFP offices. One would also expect that wealthy Chileans are more targeted with advertising related to the pension system, receive more contact from AFP staff, and have superior access to AFP offices. This may result in persons in those regions and of those income levels having a better understanding of the function of the pension system and the need to

⁶² *Indicadores de calidad de servicio de las AFP*. Rep. Superintendencia de Pensiones. Web. The Index was published by the Superintendence of the AFP used 75 metrics to rank each AFP on overall quality of service. The earliest report on all six AFPs dates to September 2011 and the reports continued until January of 2014, when they were discontinued in favor of publishing the raw metrics without assigning rank.

participate and contribute. The observed contribution rate may be higher in those regions and for those income levels. In turn, the higher contribution rate makes the market even more desirable. The cycle repeats. Yet, this is alarming because the stated purpose of the AFP is not to generate profits for the Chilean financial sector, but to provide social security for the elderly. The AFP is complex, and lack of financial literacy harms the ability of workers to succeed in it. The main determinant of whether an individual can finance a comfortable pension through the AFP is the size of their AFP balance. Workers must contribute regularly for the entirety of their working lives. Lack of competition may result in some workers being under-informed about how the pension system works, and, therefore, not adequately prepare them to retire or provide for themselves through the AFP in old age.

CHAPTER IV: DISCUSSION

In Harvard professor of economics Gregory Mankiw's introductory macroeconomics textbook, to evaluate market outcomes, he postulates how the "benevolent social planner", an "omniscient, omnipotent, benign dictator", might make decisions in an economy.⁶³ First, given some endowment of goods and services and some number of buyers and sellers, the benevolent social planner ensures that "society gets the most it can" by allocating them so as to maximize total utility—also known as Pareto efficiency. Pareto efficiency means that no individual can be made better off without making another individual worse off. Pareto efficiency is the type of efficiency that Chile's economic leaders argued the AFP would be better at achieving than a government-administered pension system could. Markets are generally a successful method of allocating society's finite goods and services, since there are unequal demands for them. Their view was that a competitive free market would reduce negative externalities that reduce the total utility of the pension system.

Second, the benevolent social planner would divide the utility in the manner that is best for society. Pareto efficiency demands that total utility is maximized, but it is agnostic to the *distribution* of total utility. A distribution of total utility where one person receives 100% of the total utility and all others receive none of it is equally Pareto efficient as a distribution where each person has an equal share of total utility, so long as total utility is at its maximum. Mankiw writes "Whereas [Pareto efficiency] is an

⁶³ Mankiw, Gregory. *Principles of Macroeconomics*. 7th ed. Cengage Learning, 2015. Print. p. 140

objective goal that can be judged on strictly positive grounds, equity involves moral judgements that go beyond economics and enter into the realm of political philosophy.” While Mankiw declines to opine on his own views of equity, he analogizes the duties of the benevolent social planner to an “economic cake”. The benevolent social planner would ensure that the cake is as big as possible. It would then slice the cake in the manner that is best for the long-term health of society.

The United Nations’ Universal Declaration of Human Rights gives some basic insight into the normative judgement of how society should slice the economic cake. Article 22 defines social security as a human right: “Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality.” Further, Article 25 elaborates the meaning of social security, stating: “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.” Therefore, governments and individuals adhering to the United Nations Universal Declaration of Human Rights have a duty to provide for the social security of their citizenry and common man. While the degree of this obligation is debatable, most people would agree that each citizen is owed some level of security.

My hope is that the Prologue of this thesis conveyed to the reader my sense of the inequity of Chile. The differences between the rich and poor there are a magnitude above that which we experience in the United States. There is also a smaller and weaker middle

class. When a society is highly unequal, as is Chile, some aspects of markets can further distort the inequities. A market-based pension system relies on a *vigorous* and *competitive* free market to be successful. A risk of a market-based pension system is that an uncompetitive system will leave the most vulnerable citizens behind. Social security systems are designed to ensure a basic level of income-security, independent of a worker's success in the labor market. This assurance is in the best interest of society not just morally, but in an economic sense as well, because it reduces the onus of elderly care on the children of those with low incomes. The next generation then has more liberty to invest in its own human capital, which helps to alleviate the cycle of poverty.

As I researched the AFP, I did find some academic studies that examined its market competitiveness. However, I feel that in studies conducted by foreign scholars and studies conducted by Chilean scholars (which are more likely to examine the minutia of the AFP), market competitiveness has been given less importance than other issues, such as the AFPs' applicability to other countries or improving the pension replacement rate. I searched academic databases, Google and Google Scholar, the World Bank, the OECD, CEPAL, and the libraries of major Chilean universities. When market competition in the AFP is discussed, it is usually as an aside to some other aspect of the AFP. Of the studies I found that had a primary focus of investigating the market competitiveness of the AFP, they all exclusively considered the market competitiveness at the national level. Even fewer used the Herfindahl-Hirschman Index to measure market concentration in the AFP. I could find no studies that measured the HHI on a regional level, nor on the level of different income tax brackets, as I have. Thus, one contribution of this thesis is that it is more than just national in scope in investigating the market competitiveness of the AFP and in employing the Herfindahl-Hirschman Index to do so.

In Chapter III, I establish, as have other researchers, that the national market of the Chilean pension system exhibits a high degree of concentration. The AFP market is *inherently* concentrated, with a minimum-possible Herfindahl-Hirschman Index of 1,667. This minimum-possible level is described by both the United States Department of Justice and the Chilean National Economic Prosecutor as meriting increased scrutiny. Still, the observed indices at the national level of 2,022 for the market concentration as measured by share of affiliates and 1,988 for the market concentration as measured by share of contributors are approximately 20% *greater* than this minimum threshold. Meaning the intrinsically concentrated AFP market has an even higher observed concentration.

The HHI vary substantially at a regional level from their national counterparts. The First and Second Regions (which are home to significant mining activity), the Santiago Metropolitan Region (which dominates the country politically, economically, and culturally), and the Twelfth Region (which enjoys natural resource wealth relative to its low population) all have HHI below the national average, which indicates that the AFP market is *more* competitive there. Those regions all have high GDP per-capita. Meanwhile, the eleven other regions have HHI above the national average, which indicates that the AFP market is *less* competitive there. This is not just a matter of position above or below the national average though. The variation is also substantial in absolute terms. The First Region HHI as measured by share of contributors—1,768—is 6.0% greater than the minimum possible HHI. Meanwhile, the Seventh Region HHI—2,442—is 46.5% greater than the minimum possible HHI. The Seventh Region HHI is equivalent to there being one fewer firm in the market and is 58 points below the marker

HHI of 2,500—a level of concentration that is nearly always unacceptable to antitrust regulators.

Similar variations are also evident in the analysis of the HHI by different income tax brackets. The HHI for persons who earned \$1.1–\$1.7 million pesos per-month (3.5–5.2 times the median income) are *below* the national average. The HHI for all other income tax brackets are *above* the national average. While the variation between the income tax bracket with the lowest HHI and the income tax bracket with the highest HHI is less than the variation between the region with the lowest HHI and the region with the highest HHI, it is still significant. The income tax bracket that is least concentrated is the bracket for persons with a monthly income from \$1.550–\$1.6 million pesos (about five times the median monthly income), with an HHI of 1,916—or 14.9% higher than the minimum. The income tax bracket that is most concentrated is the bracket for persons with a monthly income from \$250–\$300 thousand pesos (about 0.8 times the median monthly income), with an HHI of 2,387—or 43.2% higher than the minimum. The income tax bracket analysis is alarming, however, because of the population and wealth distribution. The market for the contributions of the poorest 79.7% of Chileans is less competitive than the market for the contributions of the richest Chileans. Clustered from zero to three times the median income, the HHI is *at least* approximately 30% bigger than the minimum possible HHI. These may *understate* the true lack of competition at the lowest income levels, as the median monthly income of contributors is about 1.5 times the median monthly income of all Chilean workers. Since there is no affiliate data by income tax bracket, I cannot compare the indices of contributors to affiliates.

I believe that regions and income tax brackets with high contribution rates attract greater interest from the AFPs because AFPs generate their profits from commissions on

contributions. Since these regions and income tax brackets contribute more regularly and at higher amounts, these are the most valuable regions and customers. On the other hand, a consequence of this system is that regions and income tax brackets with low contribution rates and low contribution amounts will receive less interest from AFPs. These are the least valuable regions and customers. I argue that wealthy regions are subject to virtuous cycles, where their high coverage rates are strengthened by higher market competition, and that poor regions are subject to vicious cycles, where their poor coverage rates are further weakened by a lack of market competition. I believe the same is true for wealthy and poor income tax brackets. This system provides higher individual security to workers who can benefit from more market competition, but for the large swaths of the population who must contend with less market competition, their individual security is undermined.

Most affected by this dynamic are the poor, such as my Chilean nana, who need some form of social security. It is easy to envision how she could fit into this vicious cycle. I do not know if my nana ever enrolled with an AFP, nevertheless contributes to one. Because she is classified as an independent worker, she was not obliged to participate in the AFP until 2014, and because she is paid under the table, she could still get away with not participating, if she wanted to. If she were to be participating, with such a low monthly income, it would be a struggle to be able to meet a 10% contribution requirement and still afford to provide for herself and her family—any contributions she made would realistically be infrequent and in low amounts. Overall, AFPs will avoid affiliates such as my nana because what Valdés Prieto calls the “pure production” costs of maintaining their accounts—regulatory compliance, attention to customer, monthly account disclosures, etcetera—will outweigh the meager profits the AFPs will generate

from commissions on their contributions. Furthermore, based on the logic of the profit motive, it does not make sense for AFPs to incur additional costs by sending salespersons to the neighborhood in which my nana lives, opening offices there, or creating advertising directly targeted to her. Overall, those actions would decrease AFP profits even more. I would expect, then, that my nana is comparatively less informed about the pension system than a person of higher economic status. If she does not understand how the AFP works, she will be even less successful in the pension system than her income alone would indicate because she will not understand the importance of contributing.

My analysis makes two policy recommendations clear to me. First, the Chilean government should assess if the variations in market concentration of the AFP by region and income tax bracket correspond to similar variations in knowledge of the pension system by region and income tax bracket. If so, the government should attempt to fill this information deficit through increased advertising of how the pension system functions and by supporting financial literacy programs for workers who are under-targeted by AFPs. Second, it appears that the licitation reform, through the creation of an auction mechanism where AFPs bid for new affiliates by offering the lowest commission, has successfully lowered the average commission. There are variations of proposals that would extend this reform to existing AFP affiliates who have been out of contact with their AFP for some time. For example, an affiliate would be sent multiple letters in the mail notifying them that they will be moved to the AFP that charges the lowest commission, unless they respond otherwise. Extending this reform in such a manner would be beneficial to Chileans. AFP Provida dominates the market in the poorest regions and in the lowest income levels, yet it has charged the highest commission for some years! The lack of financial knowledge of most Chileans has created significant

inertia which distorts the AFP market. Expanding licitation would result in poor Chileans immediately getting an (albeit small) income boost, and further drive down the average commission charged. In 2008 when licitation was enacted (it did not go into effect until 2010), the average commission charged on contributions was 1.74%,⁶⁴ and AFPs did not differ much on the commission they charged; collectively charging high commissions was in their mutual benefit. Now the average commission charged on contributions is 1.15%, and there is greater variation in the commission each AFP charges. Post the creation of licitation, from 2009–2013, the national HHI in terms of affiliates fell from 2,886 to 2,315—a significant reduction in four years. It has further fallen to 2,022. Over the past ten years, it seems that licitation has improved competition in the AFP more than any other reform or market forces acting alone. Expanding it should further increase market competitiveness.

An area of this thesis that merits further investigation is to analyze the statistical significance of the differences in market concentration as measured by share of affiliates versus share of contributors, as well as the differences in market concentration between regions and between income tax brackets. Another idea for further research is to investigate the qualitative side of these data. By looking at these data, it is possible to make assumptions about the business practices of each AFP and about how different classes of customers might be treated by each AFP. For example, it appears that AFP Cuprum targets northern Chile and tacitly avoids low-income customers. It appears that AFP Capital is more egalitarian in the customers it pursues both regionally and by income tax bracket. And it appears that AFP Provida employs a business strategy that

⁶⁴ Mesa-Lago and Bertranou, p. 35

emphasizes a high quantity of affiliates, even poor affiliates that other AFPs avoid, regardless of the potentially low marginal revenue on each—but since AFP Provida consistently has charged the highest commissions and ranked at the bottom for overall quality of service, this is not in their favor. I would find it fascinating if a scholar in Chile collected survey data or investigated firsthand those judgements.

Before the AFP was created in 1981, the Chilean pension system was severely unequal in its structure. The different pension regimes were stratified by several factors, the most important of which was the ability of a class of people to petition and receive patronage from the government. One aspect of the AFP that has generally been hailed as positive by both its supporters and its detractors is its equality of regime. Piñera wrote that the purpose of the AFP was to promote, “freedom, and solidarity; a fair, yet efficient retirement system... a transcendental step that would benefit every Chilean, within the spirit of freedom, progress and justice”.⁶⁵ Although the military still has a separate pension regime, all other Chileans, regardless of class, education level, industry, or other factors, are theoretically subject to the same rules and the same regime. Nevertheless, my research indicates that this supposed equality is not present as touted. As stated previously, there is a dearth of scholarly research on market competition in the AFP. This has led to the issue of its innate *inequality of opportunity* not being addressed. The AFP’s structure *theoretically* does not make it stratified, but the AFP is stratified in its *implementation*. The data indicate that workers in lower income tax brackets in south-central Chile do not receive the same treatment or have the same opportunities as workers in upper income tax brackets in Santiago. This is not the realization of a robust,

⁶⁵ Edwards, p. 39

competitive, free market that Chile's economic leaders envisioned when they first proposed the AFP in 1980. While the systemic advantages in the pension system that white-collar workers, government bureaucrats, and polo players might have over my nana are no longer as acute, they are still present.

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