Stock volatility and pension funds under an individual capitalization-based system ☆

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A R T I C L E   I N F O

A B S T R A C T

The existence of feedback effects between volatility and institutional investor holdings has been extensively studied for the United States. This article contributes to the literature by investigating this issue for Pension Fund Administrators (PFAs) in Chile. To this end, data on PFAs' holdings is gathered for 42 firms actively traded on the Santiago Stock Exchange during December 2002–July 2008. The main findings of this study are the following. First, an increase in PFAs' stock holdings translates into a mild effect on stock return volatility. Second, an increase in stock return volatility leads to a moderate decrease in PFAs' stock holdings, suggesting PFAs' preference for safer stocks. The key policy implication of these conclusions is that PFAs' stock trading does not have a destabilizing impact on the domestic stock market.

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1. Introduction

In November 1980, a decree-law repeals the publicly-administered, defined-benefit pension system in place in Chile at the time, and it establishes a new one based on individual capitalization. This new defined-contribution pension system is designed to ensure pensioners a stable income flow, calculated from the stream of past salaries/wages earned during their working lives.

The pension system is nowadays run by private entities known as Pension Fund Administrators (PFAs), which are limited companies whose sole purpose is the administration of a pension fund and other activities strictly related to pension management.

PFAs are authorized to invest their funds on various financial instruments, such as Central Bank of Chile securities, domestic treasury bonds, deposits, mortgage notes, bonds and equity securities issued by domestic financial institutions, shares of investment and mutual funds, and foreign financial assets.

A law passed in February 2002 introduces five multi-funds (A, B, C, D, and E), which primarily differ in their fixed-income security allocations. To illustrate, as of December 2011, the share of domestic and foreign fixed-income securities in Funds A, B, C, D, and E are 24.0%, 44.5%, 65.8%, 85.6%, and 98.9%, respectively.

Generally, Funds A and B involve a higher risk–return relationship, relative to Funds C, D, and E, because more resources are allocated to

equity. In particular, the permissible share of domestic and foreign equity ranges from 60% to 80% in Fund A, from 25% to 60% in Fund B, and from 0% to 5% in Fund E. The five funds also differ in their shares of foreign assets. Indeed, as of December 2011, the share of foreign securities in Funds A, B, C, D, and E reaches 65.6%, 47.1%, 31.6%, 18.9%, and 1.6%, respectively.

One question addressed by the extant literature on institutional investors' asset allocation is whether they are attracted to less-risky assets. In particular, some articles focus on testing the prudent man hypothesis in the U.S. market. The prudent man rule is drawn from the standard of reasonable care of the traditional trust law, which requires that a fiduciary behaves faithfully and discreetly, based on his/her observation of how men of prudence, discretion and intelligence handle their own affairs (Droms, 1992). Some examples of this line of research are Del Guercio (1996), Eakins, Stansell, and Wertheim (1998), Faugère and Shawky (2003), Gompers and Metrick (2001), and Sias (1996).

The aim of this article is to study feedback effects between stock return volatility and PFAs' stock holdings in Chile, which pioneers private capitalization of retirement funds in the early 1980s. To this end, this study utilizes data on PFAs' stock holdings of 42 liquid stocks traded on the Santiago Stock Exchange during the period of December 2002–July 2008. This time period is chosen in order to exclude the U.S. subprime mortgage crisis. Stock holdings are computed from information of Funds A, B, C, and D supplied by the Superintendence of Pension Funds.

The contribution of this article to the extant literature is both empirical and methodological. Firstly, this is the first study of its kind for an emerging country. Secondly, its empirical analysis is based on econometric techniques that properly gauge feedback effects in a dynamic setting. The remaining portion of this article is organized as follows.

Section 2 presents a literature review. Section 3 describes the 42 sampled firms and presents some descriptive statistics of PFAs' ownership in those firms. Section 4 focuses on the association between PFAs' stock holdings and stock return volatility for the sampled firms. Section 5 concludes by summarizing the main findings.

2. Literature review

As mentioned in the Introduction section, one strand of the literature focuses on testing the prudent man hypothesis in the U.S. market (e.g., Del Guercio, 1996; Eakins et al., 1998; Faugère & Shawky, 2003; Gompers & Metrick, 2001; Sias, 1996). In particular, Sias (1996) conjectures three reasons why institutional investors might be attracted to less-risky assets. Firstly, many of them are subject to the prudent man's rule. Secondly, institutional investors' information gathering may be less costly and less subject to processing errors. Thirdly, institutional investors may be more rational and, hence, less susceptible to fads or noise trading. To his surprise, Sias finds that institutional investors are associated with riskier securities. Sias interprets his finding as congruent with two hypotheses: i) Institutional investors may be attracted to riskier assets because they may outperform market benchmarks in the future. ii) Institutional investors may play a destabilizing role because an increase in their stock holdings may translate into more market volatility. Sias finds support for the latter.

Eakins et al. (1998) in turn investigate the association between the level of institutional ownership and firm attributes, such as beta, the current ratio (CRNT), debt to asset ratio (DTOA), a dummy variable that equals 1 if the firm pays dividends (DIVDUMMY), the market value of outstanding shares (MRKVL), the price/earnings ratio (PE), a dummy variable that equals 1 if the firm is ranked by S&P (RANKED), the return on assets (ROA), the total asset turnover (TAT), and the turnover ratio (TRNOVR). Based on a sample of firms listed on the NYSE, the AMEX, and the NASDAQ, Eakins, Stansell, and Wertheim conclude that institutional investors prefer mid-range values of betas, CRNT, DTOA, MRKVL, ROA, TAT, and TRNOVR. Econometric estimation for the full sample indicates that institutional ownership is positively associated with DIVDUMMY and RANKED, although rather weakly with the former. PE by contrast does not exhibit any explanatory power.

In a more recent study, Gompers and Metrick (2001) examine institutional investors' demand for firm characteristics during the period of

Table 1
Sampled firms.

Firm	Economic sector[a]	SAFP classification	PFA's ownership Mean	Std dev.
AGUAS-A	Water, sewage and other systems	Services	5.51%	0.66%
ALMENDRAL	Finance and insurance	Telecommunications	1.11%	0.95%
ANDINA-A	Beverage manufacturing	Industrial	8.45%	1.11%
ANDINA-B	Beverage manufacturing	Industrial	2.56%	0.69%
ANTARCHILE	Other financial investment activities	Natural resources	1.14%	0.56%
BANMEDICA	Offices of physicians	Services	2.79%	0.22%
BANVIDA	Other investment pools & funds	Services	1.37%	0.26%
BCI	Banks	Services	10.80%	0.79%
BSANTANDER	Banks	Services	1.70%	0.34%
CAP	Iron and steel mills and ferroalloy manufacturing	Natural resources	19.25%	0.92%
CCT	Tobacco manufacturing	Industrial	1.48%	0.35%
CCU	Beverage manufacturing	Industrial	9.32%	2.23%
CEMENTOS	Cement and concrete product manufacturing	Industrial	11.17%	3.49%
CGE	Electric power generation, transmission & distribution	Electric power	6.18%	1.71%
CHILE	Banks	Services	3.36%	0.60%
CINTAC	Forging and stamping	Industrial	21.86%	1.39%
CMPC	Pulp, paper, and paperboard mills	Natural resources	16.85%	0.96%
COLBUN	Electric power generation, transmission & distribution	Electric power	11.33%	2.40%
CONCHATORO	Beverage manufacturing	Industrial	21.74%	0.82%
COPEC	Gasoline stations	Natural resources	8.75%	0.37%
CORPBANCA	Banks	Services	8.01%	1.25%
CRISTALES	Glass and glass product manufacturing	Industrial	23.09%	1.24%
CTC-A	Telecommunications	Telecommunications	22.70%	1.51%
CTC-B	Telecommunications	Telecommunications	2.09%	0.08%
D&S	Other general merchandise stores	Services	10.54%	2.80%
ENDESA	Electric power generation, transmission & distribution	Electric power	20.27%	0.85%
ENERSIS	Electric power generation, transmission & distribution	Electric power	16.39%	2.36%
ENTEL	Telecommunications	Telecommunications	24.98%	0.73%
FALABELLA	Department stores	Services	4.64%	0.39%
FASA	Health and personal care stores	Services	12.99%	2.05%
GASCO	Natural gas distribution	Services	7.44%	1.12%
GENER	Electric power generation, transmission & distribution	Electric power	1.26%	1.55%
IANSA	Sugar and confectionery product manufacturing	Industrial	16.84%	1.93%
INFORSA	Converted paper product manufacturing	Natural resources	3.85%	0.40%
LAN	Scheduled air transportation	Services	1.46%	1.51%
MADECO	Steel product manufacturing from purchased steel	Industrial	10.59%	7.92%
PARAUCO	Real estate lessors	Services	10.75%	2.18%
QUINENCO	Other investment pools and funds	Industrial	1.25%	0.37%
SAN PEDRO	Beverage manufacturing	Industrial	20.87%	3.32%
SECURITY	Management of companies & enterprises	Services	3.30%	0.82%
SQM-B	Nonmetallic mineral mining & quarrying	Natural resources	13.52%	2.47%
VAPORES	Deep sea, coastal & great lakes water transportation	Services	7.21%	3.55%

[a] Economatica classification. Percentage of PFAs' firm ownership corresponds to the period of December 2002–July 2008. The data source is the Superintendence of Pension Funds (SAFP).