

SHORT-TERM EQUITY TRADING PRACTICES OF INSTITUTIONAL INVESTORS: EVIDENCE FROM PROPERTY-CASUALTY INSURERS IN THE UNITED STATES

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ABSTRACT

In addition to premiums, investment income is one of the two main sources of capital for property-casualty (P/C) insurance companies. This study investigates short-term equity trading behavior of P/C insurers in the United States in 2007 and 2008, and finds that over 27 percent of non-group affiliated insurers engage in short-term equity trading activity. When it comes to the medium of short-term equity trading, stocks categorized as Industrial and Miscellaneous Stocks are the most frequently utilized with Financial Institutions' stocks a distant second. This is due to a larger number of stocks falling under these two categories. However, in terms of the mean size of transactions, the average investment in preferred stock ranges from four to five times larger than that of common stocks during the period of interest in this study. The mean holding period for short-term common equity transaction is about 100 and 95 days in 2007 and 2008, respectively. We also identify factors associated with P/C insurers' short-term equity trading behavior. Logistic regressions show that financial variables are more strongly tied to insurers' short-term equity trading behavior than underwriting and demographic variables.

Keywords: Institutional investors, Property-casualty insurers, Investment decisions.

JEL: G11, G22, G31

1. INTRODUCTION

In addition to premiums, investment income is one of the two main sources of capital for property-casualty (P/C) insurance companies. Investment income and premiums are intertwined such that insurers invest the premiums until the premiums are used to pay for claims. At year-end 2010, the U.S. P/C insurance industry had about 60.7 percent of total assets invested in bonds and 23 percent in common stocks, excluding investments in other short-term investments, preferred stocks, and investments in affiliated companies. This investment suggests the degree of investment risk including interest rate risk to which the P/C insurers are exposed. The Insurance Regulatory Information System (IRIS), which is designed to provide information about insurers' financial solvency, also includes investment yield, which provides an indication of the general quality of the company's investment portfolio.

Findings in literature on the institutional investors' investment behavior support the prudent man rule and the institutional investors invest in equities that provide significant safety-net potential. Badrinath, Kale, and Ryan (1996), however, document that safety-net considerations explain a small portion of equity ownership by insurance companies. Another line of literature focuses on creating an asset portfolio to immunize P/C insurers' surplus from interest rate risk, while

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maximizing returns (i.e., Tzeng, Wang, & Soo, 2000).

The P/C insurer's investment perspective is in general long-term to match with the insurer's claim payout patterns for its lines of business. Investment managers of the P/C insurers, however, may have convincing reasons to have a short-term perspective in their investment horizon. Discounted cash flow (DCF) analysis, a widely-recognized approach to value financial securities in capital markets, estimates and discounts all future cash flows of financial securities to give their present values. However, DCF analysis is more complex and sensitive to assumptions than short-term earnings analysis. When it comes to selecting investment choices, investment managers, especially when their compensation and job security are related to their investment performance, may focus more on short-term earnings than long-term performance. Indeed, earnings have been one of the most important performance measures for executives and fund managers. Stock prices are very responsive to changes in short-term earnings, and Hagin (2004) reports that investment managers who are able to accurately and consistently forecast 12-month-ahead earnings can earn greater returns. Empirical evidence shows that today's investors have short-term investment horizon. Rappaport (2005) notes that the average holding period in professionally managed funds is less than a year, while the period until the mid-1960s was about seven years.

The purpose of this study is threefold. First, this study hopes to shed light on the study of the P/C insurers' short-term equity trading. So far, there is very little theory or empirical evidence on the economics of the P/C insurers' short-term equity trading and behaviors. This study investigates all short-term equity trading records of common stocks reported on Schedule D of the National Association of Insurance Commissioners

(NAIC) Annual Statement filed by all P/C insurers in the U.S. Second, this study provides empirical evidence on the determinants of the P/C insurers' short-term equity transactions. Last, but not least, the result of this study will provide a fundamental background for further research such as an investigation of whether the P/C insurers use a momentum or contrarian strategy in their short-term equity investment, and an investigation of how a catastrophic event (or loss) affects the P/C insurers' involvement in short-term trading. An unforeseen catastrophic loss may require the P/C insurers to liquidate their assets to increase cash levels to pay for claims, and the managers must make decisions whether to sell bonds or stocks, or whether to sell securities held a long period of time or a short period of time.

Short-term trading can be defined in different ways. Since this study is based on the records derived from the NAIC Annual Statement, short-term trading is defined as the acquisition and disposition of common stocks during the same fiscal year. This restriction effectively understates the P/C insurers' involvement in short-term trading since it excludes all short-term trading when buy and sell transactions are recorded for a different fiscal year, but the holding period is still less than a year.

The rest of the paper is organized as follows: the next section provides the discussion of prior literature. The data section describes the NAIC data used in the study, which should be informative for those who want to use the data set to study the P/C insurers' asset management, whether the investment horizon is short or long. The econometric model section presents a logistic model to identify factors affecting the P/C insurers' involvement in short-term trading, followed by the section discussing and summarizing empirical findings. The final section concludes the study and provides suggestions for future research.

2. PRIOR LITERATURE

There are numerous empirical investigations almost exclusively focused on the behavior of institutional investors. Many of these studies have been inspired by DeLong et al.'s (1990) proof showing that momentum traders - also referred to as trend chasers or positive feedback traders-can destabilize stock prices and thereby threaten the efficiency of financial markets.

One reason for this focus in research is the large fraction of corporate equity held by institutional investors. According to the NYSE Factbook, institutional ownership increased from 7 percent in 1950 to over 50 percent by 2002. Also, numerous examples exist over the last few years that point to herding by institutions accompanied by potentially destabilizing investment strategies. DeLong et al. note that trend chasing can specifically cause momentum or positive autocorrelation in stock prices. Hong and Stein's (1999) behavioral model, in which trading by one class produces momentum in stock prices, explicitly requires the presence of momentum traders. In their discussion of the empirical implications of their model, they expressly point out momentum trading by institutions. Hong and Stein also introduce the notion of a "momentum cycle," which they define as the period of positive return autocorrelation subsequent to the arrival of news. In a study of 1,200 institutions over a 12 year period, Badrinath and Wahal (2002) find that institutions act as momentum traders when they enter stocks but they act as contrarian traders both when they exit and when they make adjustments to ongoing holdings.

While a substantial research stream exists on the investment behavior of institutional investors, there is a paucity of studies on the reasons motivating the insurance industry in general, and in the property-liability insurance industry in particular, for engaging in short-term trading behavior. Generally,

findings in the institutional investors' investment behavior literature support the prudent man rule and that institutional investors tend to invest in equities that provide significant safety-net potential (see Badrinath, et al., 1989). However, Badrinath, Kale and Ryan (1996) document that safety-net considerations only explain a small portion of equity ownership by insurance companies. For example, Tzeng, Wang, and Soo (2000) focus on creating an asset portfolio to immunized property-liability insurers' surplus from interest rate risk, while maximizing returns. Heyman and Rowland (2006) suggest that the investment policy of most insurers should have as primary objectives immunizing insurance reserves with a fixed-income portfolio and earning abnormal returns on surplus in a responsible and disciplined way. Accounting and economic considerations led Heyman and Rowland to suggest that after-tax net investment income (NII) as defined by generally accepted accounting principles is the best benchmark of performance. They argue that the market appears to assign significantly higher multiples to NII than to other sources of reported income. Soon-Jae, et al. (1997) find that property-liability insurers demonstrate a propensity to shift their asset portfolios to stocks instead of bonds in cases of guaranty-fund enactments. This action is consistent with the risk-subsidy hypothesis where the structure of guaranty-funds provides rewards for risk-taking in an insurer's investment activities.

The compensation schedule for investment managers, and even their job security, is typically tied into their investment performance. Indeed, earnings have been one of the most important performance measures for executives and fund managers, and may create more of a focus on short-term earnings than long-term performance. Stock prices are very responsive to changes in short-term earnings, and Hagin (2004) reports that

investment managers who are able to accurately and consistently forecast earnings into the next 12 months can earn greater returns. Rappaport (2005) finds that investment managers commonly base their stock selection decisions on short-term earnings and portfolio tracking error rather than DCF analysis. He notes that the average holding period in professionally managed funds is less than one year, while the average holding period up to the mid-1960s was about seven years.

Investment managers of property-liability insurers engage in short-term equity trading, and the reasons for engaging in short-term trading may be numerous. Although studies advocate long-term value maximization and disparage the short-term earnings obsession by investment managers (i.e., Rappaport, 2005)¹, short-term trading by investment managers to realize extraordinary returns or to limit excessive losses is ubiquitous. Dividend clientele theories also suggest certain groups of investors would be engaged in short-term trading especially around the ex-dividend date. Property-liability insurers with a preference for dividend income buy shares cum-dividend and sell ex-dividend, while the opposite is true for insurers with the opposite preference. Rantapuska (2008) reports that investors who engage in overnight arbitrage from ex-dividend day trading earn on average a 2 percent return. Furthermore, behavioral finance predicts that investors who are economically rational may not always make rational decisions. For example, investors with a strategic long-term perspective may engage in short-term investments if an incentive to do so is sufficiently attractive.

According to theory, institutional investors face both risk-management and risk-shifting incentives. Gorter and Bikker (2013) assess the relevance of these conflicting incentives for Dutch pension funds and insurance firms over the period 1995 to 2009. They observe a

significant positive relationship between capital and asset risk for insurers, indicating that risk-management incentives dominate in the Dutch insurance industry.

3. DATA

We were able to obtain the relevant data for the years 2007 and 2008, which is also timely as that was during the beginning and middle of the deep recession in the U.S. and worldwide. NAIC Annual Statement reports comprehensive records of the P/C insurers' bond and stock holdings in detail and whether the financial securities are sold or held by the end of a fiscal year. Schedule D – Part 5 the NAIC Annual Statement is our primary focus. In addition, other parts of the NAIC financial statements are used to collect demographic, financial, and underwriting variables. Most stocks and bonds reported on the NAIC statements have very comprehensive information about the securities, including CUSIP, date acquired and disposed of, maturity date, coupon rate, par value, cost to acquire, book value, number of shares, dividends and interest, adjustment for foreign exchange, if applicable, and transaction partner, to name a few.

Schedule D – Part 5 of the NAIC statements also includes many non buy-sell involved short-term transactions, including spinoffs, stock splits, and stock dividends, to name a few. In addition, the data set includes such noise as missing the disposal or acquired date or missing the acquiring cost. We have eliminated transactions with missing information, incorrect transaction dates, and no cash purchases. In addition, we have limited the acquiring cost to \$10,000 to eliminate any noise that can still escape from the aforementioned filters. After these filters, we have identified 5,551 and 7,388 short-term common stock transactions in 2007 and 2008, respectively, by 249 and 259 non-group affiliated insurers in 2007 and 2008, respectively.

4. ECONOMETRIC MODELS

Using the ordinary least square (OLS) regression is problematic in identifying factors affecting the insurer's decision to engage in short-term trading, due to the binary response variable; 1 if an insurer performed at least one short-term equity trading, 0 otherwise. Logistic regression analyzes binomially distributed data of the form

$$Y_i \sim B(N_i, P_i) \text{ for } i = 1, \dots, k, \quad (1)$$

where the numbers of N_i , Bernoulli trials, are known and the probabilities of event P_i are unknown. Given a set of explanatory variables, X_i , the logistic regression model is written as;

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{1,i} + \dots + \beta_k X_{k,i} \quad (2)$$

If an insurer engages in short-term equity trading, the probability of event $P_i = 1$, where we obtain $L_i = \ln\left(\frac{1}{0}\right)$ and $L_i = \ln\left(\frac{0}{1}\right)$

otherwise. In the logit regression, this study examines demographic, financial, and underwriting variables such as group affiliation, organizational structure, insurer's size, relative surplus amount, one-year surplus change, cash holdings, etc, among others.

Another regression analysis is performed to further investigate factors affecting the level of short-term equity trading, which analyzes a subset of the sample, P/C insurers with $P_i=1$ from the above logistic regression. The dependent variable in this analysis is the number of short-term transactions, mean value per transaction or mean return from transactions.

5. RESULTS AND DISCUSSION

As mentioned above, we obtain 249 and 259 non-group affiliated individual insurers engaged in at least one short-term equity

transaction in 2007 and 2008, respectively. In addition, there are 672 and 685 non-group affiliated insurers, in 2007 and 2008, respectively, that did not engage in a short-term equity transaction. From the original data set, insurers whose surplus or risk based capital (RBC) is negative or premiums written are non-positive are also eliminated. Out of 689 insurers, 37.3% (257 insurers) report at least one short term equity transaction in 2007 and 2008. As shown in Table 5.1, insurers with short-term equity trading (Trading Insurers) are larger in total assets than insurers with no short-term trading (No-trading Insurers). The mean total asset of Trading Insurers is \$177.73 million, while that of No-trading Insurers is \$57.04 million. In terms of investment mix, Trading Insurers are associated with more risky asset compositions. Trading Insurers have less cash to total assets (12.6% vs. 31.6%), higher composition of stocks in invested assets (19.76% vs. 7.27%), and lower surplus to total assets ratio (46.52% vs. 52.33%).²

In terms of lines of business mix, we do not find any statistical difference between Trading Insurers and Non-trading Insurers. These two groups of insurers are quite similar in terms of their lines of business concentration. For example, insurers' premiums written in automobile insurance to total premiums written is almost identical (17.74% vs. 17.61%) in 2007, and the statistical indifference for lines of business mix is also reported for 2008.

In terms of the total number of short-term transactions, we document a total of 34,336 short-term equity transactions by 800 P/C insurers, and 83 percent of the transactions involve stocks of industrial and miscellaneous companies. The mean holding period for all short-term equity trading is about 88 days with the mean holding period for stocks of affiliates being the shortest, 48 days and that for stocks of industrial and miscellaneous companies being the longest, 90 days.

Table 5.1. Descriptive Statistics for Selected Variables

Panel A. Year 2007	Short-term Trading (Yes, N=249)		Short-term Trading (No, N=672)	
	Mean	Std. Dev.	Mean	Std. Dev.
Net Premiums Written, (in \$millions)	46.66	96.05	15.90	50.40 ***
Total Assets, (in \$millions)	177.73	486.71	57.04	207.85 ***
Cash to Invested Assets, %	14.97	15.02	40.46	35.72 ***
Cash to Total Assets, %	12.59	12.55	31.64	29.15 ***
Bonds to Invested Assets, %	61.11	20.93	49.69	34.66 ***
Preferred Stocks to Invested Assets, %	1.31	4.47	0.56	2.58 **
Common Stocks to Invested Assets, %	19.76	16.14	7.27	14.91 ***
Invested Assets to Total Assets, %	85.92	12.19	83.12	18.49 ***
Surplus to Total Assets, %	46.52	18.34	52.33	23.98 ***
RBC Ratio, %	81.15	20.88	69.77	41.97 ***
Auto Lines Ratio, %	17.74	32.74	17.61	35.08
Liability Lines Ratio, %	54.10	43.04	50.68	45.82
Property Lines Ratio, %	15.01	24.03	16.47	28.67
ROI, %	4.58	1.91	4.36	7.06
ROE, %	9.15	16.63	4.87	25.67 ***
ROA, %	3.83	5.84	3.26	10.49
Stock, %	44.58	49.81	47.32	49.97
Panel B. Year 2008	Short-term Trading (Yes, N=259)		Short-term Trading (No, N=685)	
	Mean	Std. Dev.	Mean	Std. Dev.
Net Premiums Written, (in \$millions)	48.04	109.56	14.51	44.04 ***
Total Assets, (in \$millions)	156.62	413.43	62.42	244.90 ***
Cash to Invested Assets, %	18.15	17.96	39.69	34.80 ***
Cash to Total Assets, %	15.23	15.71	30.64	28.29 ***
Bonds to Invested Assets, %	63.14	21.90	50.65	34.33 ***
Preferred Stocks to Invested Assets, %	1.19	3.11	0.51	2.68 ***
Common Stocks to Invested Assets, %	14.55	12.34	6.79	14.94 ***
Invested Assets to Total Assets, %	84.76	12.41	82.78	19.09 *
Surplus to Total Assets, %	45.28	19.18	50.77	42.51 ***
RBC Ratio, %	80.11	23.32	67.29	78.90 ***
Auto Lines Ratio, %	17.76	31.90	16.63	34.31
Liability Lines Ratio, %	52.30	42.74	51.94	46.32
Property Lines Ratio, %	14.87	23.22	15.54	28.44
ROI ^a , %	0.93	5.36	2.55	3.59 ***
ROE, %	2.29	41.16	(0.17)	41.51
ROA, %	1.10	7.45	0.43	11.86
Stock, %	43.63	49.69	45.99	49.87

Note ^a ROI is calculated as Net Investment Income earned to Invested Assets.
 *, **, and *** indicates statistical significance at 10%, 5%, and 1% level, respectively, for a mean difference test between short-term traders and no short-term traders.

Logistic regression analysis shows that financial and demographic variables are statistically stronger factors than underwriting variables for increasing the odds of insurers' short-term equity trading activities. The P/C insurers with group affiliation, relatively high cash holdings, lower change in surplus from the previous year, or non-stock corporations are less likely to engage in short-term equity trading, while the P/C insurers with large total assets, relatively high risk based capital (RBC), relatively large invested assets, or more business in personal

lines are more likely to engage in short-term equity trading.

As seen in Table 5.1, both groups of insurers are relatively similar in several aspects. Lines of business where both groups generate premiums are similarly distributed. For example, the proportion of premiums from automobile insurance to all insurance is 19.5% for No-trading Insurers vs. 21.9% for Trading Insurers. Trading Insurers have higher business in liability lines, but lower in property lines of insurance than its counterpart. Both groups of insurers are also

similar in organizational structure. Stock incorporated No-trading and Trading insurers are 47.4% and 45.9%, respectively. Two main organizational structures among property liability insurers are stock and mutual form. When it comes to profitability measures, Trading Insurers on average have lower ROA than No-trading Insurers, while the ROI is similar.³ Table 5.2 summarizes the number of insurers engaged in short-term equity trading, their acquiring cost and holding period by type of stock. Common stocks are more commonly traded than preferred stocks. Not surprisingly, over 98% (12,939 out of 13,146) of short-term transactions are with common stocks, and on average, Trading Insurers engaged in over 23 short-term transactions in 2007 and over 30 transactions in 2008.

period in days for common stock transactions is slightly more than 100 days in 2007 and was reduced slightly to just over 95 days in 2008.⁴ The holding period in days for preferred stocks was just under 75 days in 2007 and was extended to slightly more than 112 days in 2008. During the years 2007 and 2008, the Standard & Poor's 500 Index, a measure of broad market returns, faced challenges related to the financial crisis. The subprime mortgage crisis resulted in what some have termed The Great Recession in the U.S. and globally. S & P 500 returns were 3.53 percent in 2007 and -38.49 percent in 2008. As observed in Table 5.3, in terms of profitability from short-term common equity transactions,⁵ trading insurers realize a positive mean return (0.1%) only when

Table 5.2. Short-Term Transaction, Acquiring Cost, and Holding Period by Type of Stock (N is the number of short-term transactions.)

<u>Panel A. Year 2007</u>		Short-Term Transactions			Acquiring Cost per Transaction (\$000)		Holding Period (days)	
	Insurers	N	Mean	Max	Mean	Max	Mean	Max
Preferred Stocks								
Public Utilities	4	78	19.50	75	1,419.5	1,282.8	51.2	265
Banks, Trust & Insurance	13	46	3.54	19	5,482.0	7,994.7	88.9	304
Industrial & Miscellaneous	32	89	2.78	14	269.2	424.1	87.6	292
Total - Preferred Stocks	41	213	5.22	81	1,808.9	4,259.5	74.8	304
Common Stocks								
Public Utilities	26	91	3.50	23	187.1	949.2	98.7	341
Banks, Trust & Insurance	92	457	4.97	51	372.7	3,319.2	98.5	355
Industrial & Miscellaneous	227	5,003	22.04	712	387.1	6,581.6	100.2	359
Total - Common Stocks	241	5,551	23.03	712	382.7	6,321.5	100.1	359
<u>Panel B. Year 2008</u>		Short-Term Transactions			Acquiring Cost per Transaction (\$000)		Holding Period (days)	
	Insurers	N	Mean	Max	Mean	Max	Mean	Max
Preferred Stocks								
Public Utilities	6	82	13.67	72	1,923.8	1,860.1	56.0	231
Banks, Trust & Insurance	22	80	3.64	28	147.2	262.3	111.4	323
Industrial & Miscellaneous	44	102	2.32	16	249.2	391.0	157.6	332
Total - Preferred Stocks	61	264	4.33	72	738.4	1,335.0	112.1	332
Common Stocks								
Public Utilities	35	182	5.20	42	64.2	114.6	90.0	336
Banks, Trust & Insurance	94	560	5.96	70	119.3	611.4	101.1	326
Industrial & Miscellaneous	237	6,646	28.04	695	223.4	799.1	95.1	364
Total - Common Stocks	242	7,388	30.54	695	211.6	777.3	95.4	364

In terms of the trading size, the mean acquiring cost per preferred stock transaction was 4.7 times the mean acquiring cost of common stocks in 2007; in 2008, the mean acquiring cost per preferred stock transaction was 3.9 times the mean comparable cost of acquiring common stocks. The mean holding

including dividends for stocks issued by industrial and miscellaneous companies. Including dividends in the mean return for a bearish 2008 market made no difference, as all types of common stock had a negative mean return, with public utilities dropping the least (-8.9%).

Table 5.3. Holding Period Returns by Type of Stock (N is the number of short-term transactions)

Panel A. Year 2007		Mean Return (%), excluding Dividend Receipts				Mean Return (%), including Dividend Receipts			
	N	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Preferred Stocks									
Public Utilities	78	-0.1	3.7	-10.3	27.2	1.1	3.6	-2.4	30.9
Banks, Trust & Insurance	46	-4.2	9.0	-32.4	20.0	-2.9	8.9	-31.0	24.4
Industrial & Miscellaneous	89	2.7	12.9	-44.6	30.5	4.2	13.0	-43.1	33.7
Total - Preferred Stocks	213	0.2	9.9	-44.6	30.5	1.6	9.9	-43.1	33.7
Common Stocks									
Public Utilities	91	-1.6	18.1	-35.5	144.3	-1.0	18.5	-35.5	149.0
Banks, Trust & Insurance	457	-10.3	19.6	-100.0	141.7	-9.6	19.4	-98.9	141.7
Industrial & Miscellaneous	5,003	-0.4	22.3	-95.9	221.7	0.1	22.3	-95.9	226.7
Total - Common Stocks	5,551	-1.2	22.2	-100.0	221.7	-0.7	22.2	-98.9	226.7
Panel B. Year 2008		Return per Transaction, excluding Dividends				Return per Transaction, excluding Dividends			
	N	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Preferred Stocks									
Public Utilities	82	-0.7	3.7	-20.7	5.3	0.5	3.5	-17.5	5.3
Banks, Trust & Insurance	80	-11.7	37.1	-100.0	103.2	-9.9	36.2	-96.0	103.2
Industrial & Miscellaneous	102	-48.7	41.3	-100.0	73.2	-45.9	40.5	-99.2	73.2
Total - Preferred Stocks	264	-22.6	39.0	-100.0	103.2	-20.6	38.0	-99.2	103.2
Common Stocks									
Public Utilities	182	-9.7	21.6	-70.4	173.7	-8.9	21.6	-70.4	173.7
Banks, Trust & Insurance	560	-26.0	27.9	-98.7	70.6	-25.0	27.8	-97.5	70.8
Industrial & Miscellaneous	6,646	-17.3	26.3	-100.0	330.7	-16.8	26.2	-100.0	330.7
Total - Common Stocks	7,388	-17.7	26.5	-100.0	330.7	-17.2	26.4	-100.0	330.7

A logistic regression is performed to identify factors associated with the P/C insurer's short-term equity trading behavior, where dependent variables are zero-one binomial variables with 1 for Trading Insurers and 0 for No-Trading Insurers. The results are reported in Table 5.4.

For insurers with short-term stock trading, financial variables are statistically significant, while none of demographic and underwriting variables are statistically significant. The variables that are positively associated with Trading Insurers are total assets (*Log of Total Assets and Log of Total Assets-Squared, t-1*), the

Table 5.4. Logistic Regression for Variables Predicting Decisions to Engage in Short-Term Transactions (Dependent variable is 1 for engaging in at least one short-term trading and 0 otherwise)

	Year 2007			Year 2008		
	Parameter Estimates	Standard Error	Odds Ratio	Parameter Estimates	Standard Error	Odds Ratio
Constant	26.30	8.692 ***		30.88	8.516 ***	
Organizational Structure (Stock = 1, all else = 0)	0.072	0.183	1.075	0.111	0.182	1.117
Log of Total Assets, t-1	-2.528	0.985 **	0.080	-3.074	0.958 ***	0.046
Log of Total Assets-Squared, t-1	0.060	0.028 **	1.061	0.077	0.027 ***	1.08
Cash to Total Assets, t-1, %	5.277	0.638 ***	195.77	5.464	0.643 ***	236.11
Bonds to Total Assets, t-1, %	3.176	0.465 ***	23.95	3.205	0.479 ***	24.66
Invested Assets to Total Assets, t-1, %	-2.835	0.604 ***	0.059	-2.935	0.617 ***	0.053
Surplus to Total Assets, t-1, %	0.361	0.553	1.435	0.964	0.580 *	2.621
ROI, t-1, %	2.017	3.927	7.516	-0.769	1.600	0.464
ROA, t-1, %	-0.115	1.370	0.891	0.286	1.343	1.331
NPW on Auto Lines of Insurance, %	0.064	0.285	1.067	-0.121	0.286	0.886
NPW on Liability Lines of Insurance, %	-0.379	0.233	0.685	-0.023	0.228	0.978
NPW on Property Lines of Insurance, %	-0.461	0.422	0.630	-0.425	0.417	0.654
Risk Based Capital to Surplus, t-1, %	-0.369	0.233	0.692	-1.207	0.402 ***	0.299
Likelihood Ratio		212.62			227.522	
Wald		139.98			141.26	
Number of Observations		921			944	

Note: *, **, and *** indicates statistical significance at 10%, 5%, and 1% level, respectively

invested asset ratio (*Invested Assets to Total Assets*, $t-1$), the cash ratio (*Cash to Total Assets*, $t-1$), and the bond ratio (*Bonds to Total Assets*, $t-1$). Surprisingly, insurers with more cash holdings are positively significant to the short-term equity trading activity. This is inconsistent with the view that more conservative insurers will hold more safe assets and engage in less risky transactions. The significant variables were essentially the same when performing the logistic regression for 2008, with the exception of the Risk-Based Capital to Surplus ratio, which was not significant in 2007 and negatively significant at the 1% level in 2008.

One possible reason for these results may be related to the capital reserve requirements imposed on financial institutions by the federal government.

Ordinary least squares regressions were performed for the years 2007 and 2008 as an additional verification of the logistic regression results discussed above. In this study, the results ended up as somewhat similar using both methodologies, and can be seen in Table 5.5 below.

Table 5.5. OLS Regression of the Number of Short-Term Transactions

	Year 2007		Year 2008	
	Parameter Estimates	Standard Error	Parameter Estimates	Standard Error
Organizational Structure (Stock = 1, all else = 0)	2.524 (2.123)	8.769 (6.760)	2.627 (3.376)	11.63 (9.830)
Log of Total Assets, t-1	-68.30* (40.611)	-163.57 (111.19)	-87.85** (41.344)	-235.65** (108.631)
Log of Total Assets-Squared, t-1	2.169* (1.241)	5.034 (3.251)	2.806** (1.270)	7.279** (3.159)
Cash to Total Assets, t-1, %	-30.85*** (9.966)	-46.69** (18.962)	-47.47*** (14.124)	-137.63*** (42.251)
Bonds to Total Assets, t-1, %	-28.56*** (10.297)	-60.34*** (21.168)	-44.98*** (14.307)	-139.02*** (41.341)
Invested Assets to Total Assets, t-1, %	19.52*** (5.967)	4.417 (19.573)	36.68*** (11.777)	65.75** (31.736)
Surplus to Total Assets, t-1, %	2.501 (4.435)	9.825 (20.609)	1.201 (6.763)	0.8665 (28.048)
ROI, t-1, %	89.27 (97.972)	173.55 (263.03)	11.23 (11.104)	77.37 (63.381)
ROA, t-1, %	-12.24 (8.214)	-41.56 (41.933)	-7.450 (9.234)	-111.91** (56.754)
NPW on Auto Lines of Insurance, %	-1.459 (2.380)	-9.991 (8.850)	-2.834 (3.340)	-21.58 (12.176)
NPW on Liability Lines of Insurance, %	2.923 (2.519)	1.420 (10.638)	4.788 (3.613)	12.31 (11.144)
NPW on Property Lines of Insurance, %	0.0117 (5.837)	-6.351 (23.191)	1.764 (5.488)	-7.329 (23.710)
Risk Based Capital to Surplus, t-1, %	1.456 (1.123)	1.613 (9.548)	-0.0385 (0.039)	14.37 (13.235)
Adjusted R-Sq	0.1646	0.2345	0.1621	0.3097
Number of Observations	921	249	944	259

Note: The figures in the parentheses are heteroscedasticity consistent errors.

The coefficient estimates for constant are omitted.

All samples include all non-group affiliated insurers and Short-Term Traders include all non-group affiliated insurers with at least one short-term trading in the corresponding year.

*, **, and *** indicates statistical significance at 10%, 5%, and 1% level, respectively

CONCLUSION

This study investigates short-term equity trading behavior of P/C insurers in the United States in 2007 and 2008, and finds that over 27 percent of non-group affiliated insurers engage in short-term equity trading activity. When it comes to the medium of short-term equity trading, stocks categorized as Industrial and Miscellaneous Stocks are the most frequently utilized with Financial Institutions' stocks a distant second. This is because a larger number of stocks fall under these two categories. However, in terms of the mean size of transactions, the average investment in preferred stocks ranges from four to five times larger than that of common stocks during the period of interest in this study. The mean holding period for short-term common equity transaction is about 100 and 95 days in 2007 and 2008, respectively.

This study also identifies factors associated with P/C insurers' short-term equity trading behavior. Logistic regressions show that financial variables are more strongly tied to insurers' short-term equity trading behavior than underwriting and demographic variables.

Future research should investigate the short-term equity and/or fixed income security trading behavior of group affiliated insurers and compare the trading behavior between them. An important next step in this study is to incorporate market data from Center for Research in Security Prices (CRSP) to further explore the insurer's motivation to engage in short-term equity trading. With the CRSP data, future research can analyze whether P/C insurers are selling stocks to capture extraordinary short-term returns, to limit excessive losses, to increase dividend yield, or if other motivators exist.

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¹ Rappaport describes short-term earnings obsession as an impediment to good corporate governance and long-term value creation, and posits that reducing short-term performance obsession has a substantial payoff potential to the investment and corporate communities.

² Insurers are required to report their financial statements following Statutory Accounting Principles (SAP) to state departments of insurance, and the term “surplus” is used in lieu of the “equity” in Generally Accepted Accounting Principles (GAAP). Total Assets used in this study also follows the definition of SAP, known as total admitted assets, which is smaller than total assets if it is calculated using GAAP.

³ ROI is calculated as Net Investment Income Earned to Invested Assets.

⁴ About 14% of all preferred stock transactions are same day transactions. That is, buy and sell are recorded on the same day. On the other hand, about 3.5% of all common stock transactions are same day transactions. The result of the holding period distribution by type of stock is available from the author upon request.

⁵ These returns are not annualized.