Share pledging and asset prices:
Evidence from the Thai stock market

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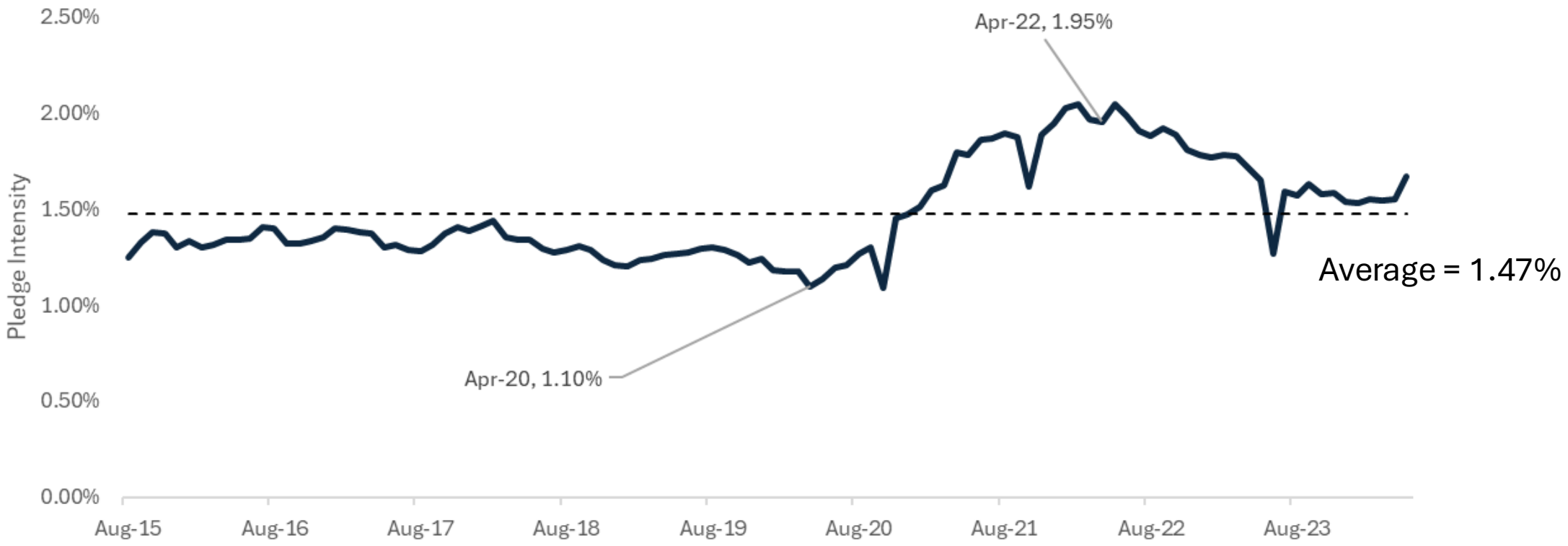
What is share pledging?

Pledge intensity—the proportion of shares pledged relative to total shares—can have significant implications for stock prices, particularly in volatile markets.



Why might share pledging influence asset prices?

Market Uptrend

- Increased buying power (Leverage)
- Higher demand drives market prices, speculative behavior and overconfidence
- Rising equity, lower risk of margin calls, but overvaluation risk tend to have correction

Market Downtrend

- Increased risk of margin calls
- Forced selling exacerbates market decline, can create a feedback loop
- Panic and volatility and heavy losses for over-leveraged investors

This paper

- Is pledge intensity related to future stock performance?
  - Yes, but negative relationship
- Are past stock returns related to pledge intensity?
  - No, don’t find a relationship
- Is the relationship different during market upturns and downturns?
  - Yes, very volatile period after COVID-19 pandemic up and down cycle

Related Literature

Margin trading can influence stock price dynamics.

- **Margin trading** can **exacerbate stock price volatility** (Chan et al., 2018)
- **Higher past returns** can lead to **increased margin usage** (Deshui, Akbar, and Bilal, 2023)
- **Adverse impact** of **share pledging** on **shareholder wealth** (Dou, Masulis, and Zein, 2019)

Investors who use margin accounts may require regulatory supervision.

- Those **who trade on margin** tend to **speculate more** and exhibit **poorer security selection abilities** than cash account investors (Barber et al, 2022)
- **Lower financial literacy** correlates with **higher margin usage** among investors (Kim, Kim, and Hanna, 2022)

Data Overview

Sample: listed companies in SET and mai from 2016 to 2024

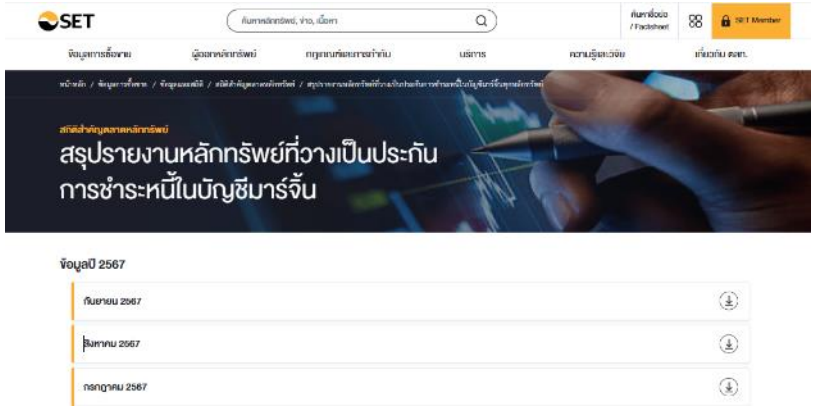
Key Variables:

- **Pledge intensity** (proportion of shares pledged to total shares)
- Stock related data (returns, price-to-earnings ratio, price-to-book ratio, market capitalization)

Data Sources:

- **Margin trading data**, obtained from the report on the concentration of listed securities used as collateral in margin accounts, published by the Securities and Exchange Commission (SEC)
- Financial statements and price data from SETSMART

Source: https://www.sec.or.th/TH/Pages/MARKETDATA/RISKMANAGEMENT.aspx



Source: https://www.set.or.th/th/market/statistics/market-statistics/margin-accounts

Summary Statistics

These tables report the number of stocks, medians of market capitalization, P/E ratio, P/B ratio, lagged return (1m), and lagged return (12m) for each year. They compare between the characteristics of pledged and not-pledged stocks.

The characteristics of pledged stocks

Year	Number of Stocks	Market Cap.	P/E Ratio	P/B Ratio	Lagged return (1m)	Lagged return (12m)
2016	501	4,208.74	13.54	1.62	0.01	-0.05
2017	522	4,609.51	15.63	1.80	0.00	0.09
2018	538	3,571.40	17.68	1.78	-0.08	-0.07
2019	550	3,616.11	14.56	1.28	0.04	-0.04
2020	527	3,126.30	13.95	1.27	0.01	-0.22
2021	632	3,595.70	12.48	1.12	0.00	0.37
2022	667	3,891.89	15.91	1.62	-0.05	0.03
2023	668	3,537.88	15.19	1.50	-0.05	-0.08
2024	669	3,142.43	15.32	1.52	-0.01	-0.12

The characteristics of not-pledged stocks

Year	Number of Stocks	Market Cap.	P/E Ratio	P/B Ratio	Lagged return (1m)	Lagged return (12m)
2016	139	2,234.69	10.89	1.44	0.02	-0.13
2017	143	2,535.23	9.07	1.69	0.00	0.07
2018	157	2,210.20	15.24	1.54	-0.05	-0.08
2019	168	1,994.00	8.84	1.34	0.02	-0.08
2020	197	1,232.41	6.91	1.17	-0.01	-0.18
2021	123	3,360.00	11.95	1.64	0.02	0.37
2022	115	4,422.96	6.67	1.68	-0.02	0.21
2023	149	2,011.60	4.59	1.60	-0.04	-0.01
2024	176	760.00	10.51	1.40	0.01	-0.12

Is pledge intensity related to future stock performance?

Share pledging can influence stock price dynamics, but does it lead to underpricing or overpricing?

$$r_{i,t+k} = \alpha + \beta_1 PI_{it} + \beta_2 r_{m,t+k} + \beta_3 \log(ME_{it}) + \beta_4 BM_{it} + \beta_5 r_{i,t-1} + \beta_6 r_{i,t-12,t-2} + \varepsilon_{it}$$

	(1)	(2)	(3)
Return	t+1	t+2	t+3
Pledge Intensity	-0.0202**	-0.0356***	-0.0382***
	(0.00843)	(0.00993)	(0.0107)
Market Return	0.983***	0.998***	1.001***
	(0.0218)	(0.0223)	(0.0224)
log(Market Cap)	-0.000901***	-0.000854***	-0.000789**
	(0.000291)	(0.000309)	(0.000313)
B/M Ratio	0.000808***	0.000864**	0.00101***
	(0.000295)	(0.000339)	(0.000366)
Lagged return (1m)	0.0349***	0.00731	0.0205***
	(0.00881)	(0.00600)	(0.00629)
Lagged return (12m)	0.0123***	0.00933***	0.00570***
	(0.00191)	(0.00196)	(0.00177)
Constant	0.00816***	0.00777***	0.00721**
	(0.00273)	(0.00292)	(0.00295)
Observations	51,082	50,508	49,950
Adjusted R-squared	0.128	0.131	0.132

- This study employs the OLS regression approach using three different returns (one month, two months, and three months).
- Pledge intensity is negatively related to future returns, up to three months.
- While Chan et al. (2018) find that margin trading can exacerbate stock price volatility, the negative relations may be a result of margin call and force sales.
- Stocks with high pledge intensity are more susceptible to margin calls during market downturns. Forced selling can exacerbate price declines, resulting in poorer future performance.

Are past stock returns related to future pledge intensity?

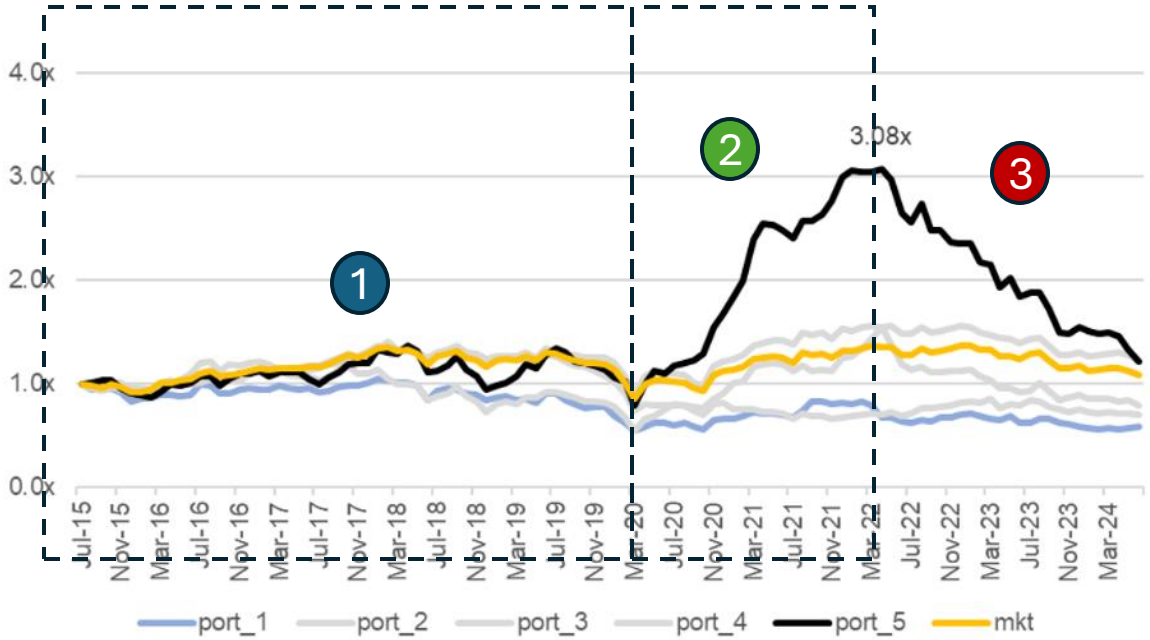
Stock with high cumulative returns may be more likely to pledged as collateral. If so, we should see a positive relationship between lagged returns and pledge intensity.

$$PI_{i,t+k} = \alpha + \gamma_1 \log(ME_{it}) + \gamma_2 BM_{it} + \gamma_3 r_{i,t-1} + \gamma_4 r_{i,t-12,t-2} + \varepsilon_{it}$$

	(1)	(2)	(3)
Pledge Intensity	t+1	t+2	t+3
log(Market Cap)	-0.00133	-0.00130	-0.00129
	(0.000889)	(0.000887)	(0.000885)
B/M Ratio	-0.000915*	-0.000905*	-0.00102*
	(0.000539)	(0.000529)	(0.000569)
Lagged return (1m)	-0.000668	-0.00114	-0.00292
	(0.00219)	(0.00226)	(0.00225)
Lagged return (12m)	0.00260	0.00333	0.00434**
	(0.00206)	(0.00208)	(0.00211)
Constant	0.0443***	0.0439***	0.0438***
	(0.00819)	(0.00818)	(0.00817)
Observations	51,082	50,508	49,950
Adjusted R-squared	0.002	0.002	0.003

- Past returns (1 month and 12 months) do not significantly predict pledge intensity, unlike Deshui, Akbar, and Bilal (2023).
- The consistently significant positive coefficient for the constant term suggests that the baseline level of margin usage is relatively stable and unaffected by past returns.
- Overall, regressions have very low adjusted R-squared. Other factors like size and the book-to-market ratio also do not show systematically significant relationship with future pledge intensity.

Pledge intensity and stock performance: A portfolio approach



- Pledge intensity defined as the proportion of pledged shares compared to all shares outstanding
  - Port 1 corresponding to stocks without share pledging (no margin)
  - Port 5 pledge intensity above the 95th percentile
- Compare portfolios' returns in 3 periods
  1. Sideways Period (before COVID-19) – No significant returns for high-pledge portfolios
  2. Up Cycle (April 2020 - April 2022) – High-pledge portfolios outperformed significantly due to leverage boosting gains
  3. Down Cycle (May 2022 - June 2024) – High-pledge portfolios faced the biggest losses as leverage amplified the downturn

Pledge intensity and stock returns during market upturns and downturns

While the top-margin portfolio showed average returns close to zero overall. During the uptrend after the COVID-19 lockdowns, high-margin portfolios saw strong gains due to leverage amplifying returns. However, after April 2022, as the market declined, the high-margin portfolios led to larger losses.

Panel A: All Periods

Portfolio	1 No Pledge	2 <20th	3 20th-80th	4 80th-95th	5 >95th	Market
Ann. Ret	-4.02	1.01	2.91	-1.10	5.70	1.83
Ann. Vol	14.00	15.09	15.80	22.72	26.08	14.99
Max Ret	12.08	19.70	19.23	20.40	26.48	17.93
Min Ret	-11.91	-13.00	-16.09	-21.14	-23.40	-15.41
t-Stat	-0.86	0.20	0.55	-0.14	0.65	0.36

Panel B: Before COVID-19 (up to December 2019)

Portfolio	1 No Pledge	2 <20th	3 20th-80th	4 80th-95th	5 >95th	Market
Ann. Ret	-1.55	2.44	6.18	-3.59	5.14	4.09
Ann. Vol	12.52	9.97	11.35	18.50	21.09	10.99
Max Ret	8.39	5.90	7.43	9.87	11.37	6.67
Min Ret	-11.06	-6.11	-7.67	-13.96	-15.29	-7.81
t-Stat	-0.26	0.51	1.14	-0.41	0.51	0.78

Pre Covid-19: no relationship

Panel C: April 2020 - April 2022

Portfolio	1 No Pledge	2 <20th	3 20th-80th	4 80th-95th	5 >95th	Market
Ann. Ret	18.95	12.95	28.00	49.13	82.67	25.53
Ann. Vol	15.21	21.69	22.36	23.22	28.44	20.61
Max Ret	12.08	19.70	19.23	20.40	26.48	17.93
Min Ret	-5.52	-7.24	-5.84	-4.96	-3.97	-5.64
t-Stat	1.69	0.81	1.70	2.87	3.94	1.68

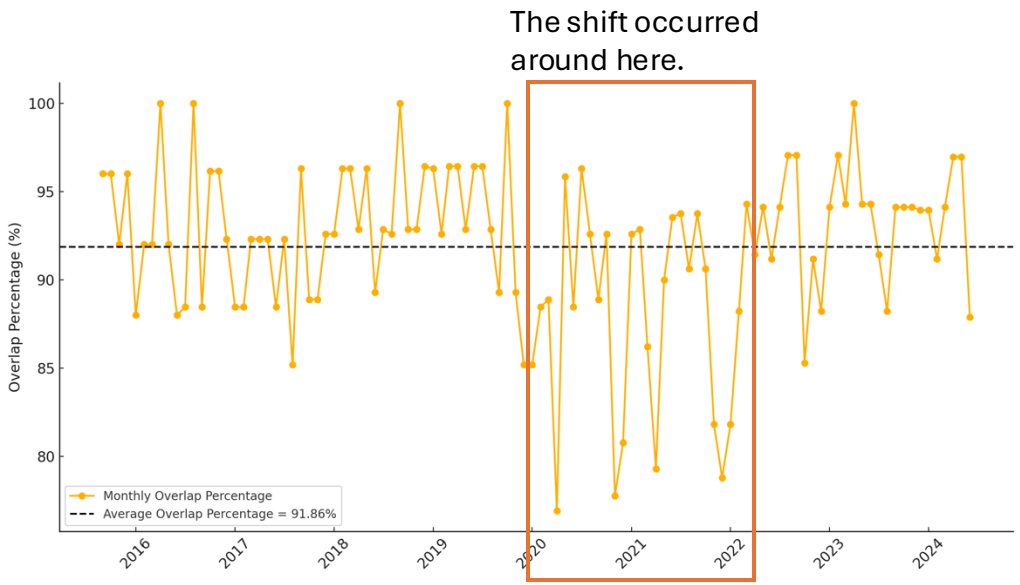
Panel D: May 2022 - June 2024

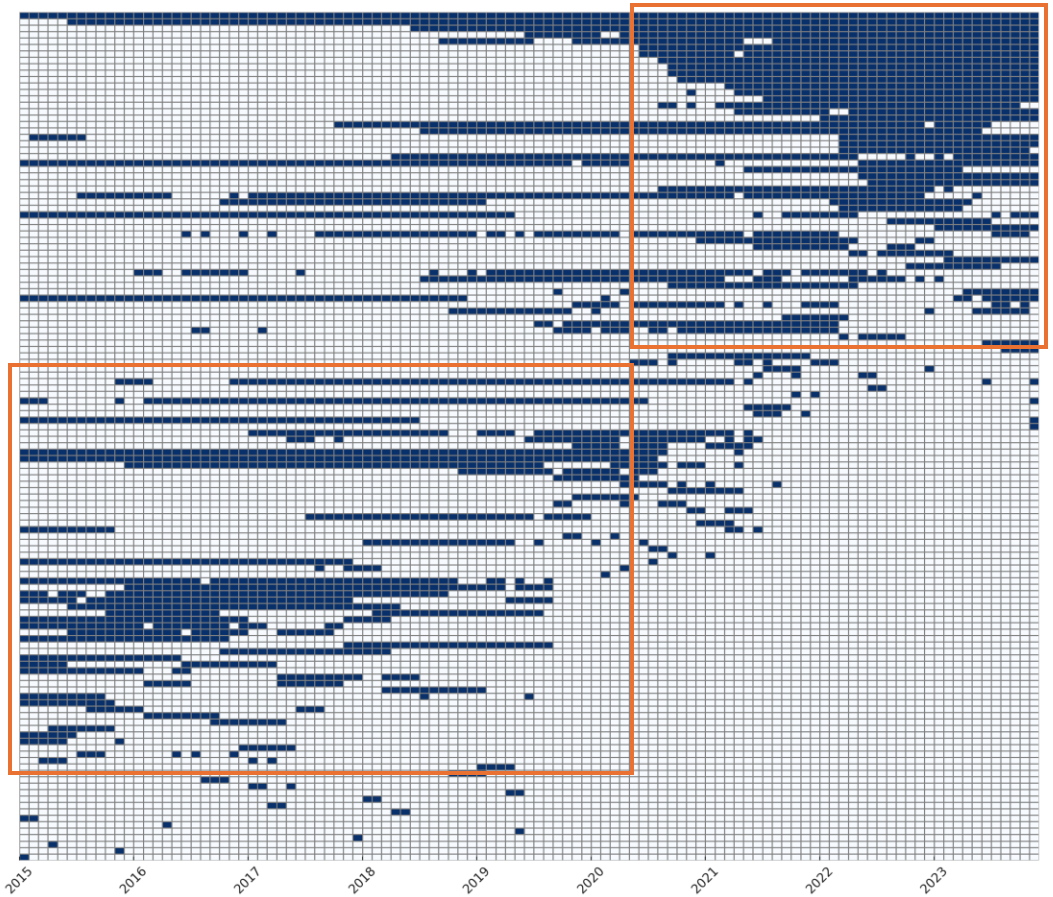
Portfolio	1 No Pledge	2 <20th	3 20th-80th	4 80th-95th	5 >95th	Market
Ann. Ret	-14.34	1.14	-8.80	-19.02	-37.45	-7.32
Ann. Vol	10.77	13.13	9.89	21.46	17.99	9.85
Max Ret	4.74	6.05	4.35	9.61	7.28	4.64
Min Ret	-9.31	-10.89	-6.73	-15.06	-13.77	-6.11
t-Stat	-2.07	0.13	-1.38	-1.38	-3.24	-1.15

Post Covid-19: up and down

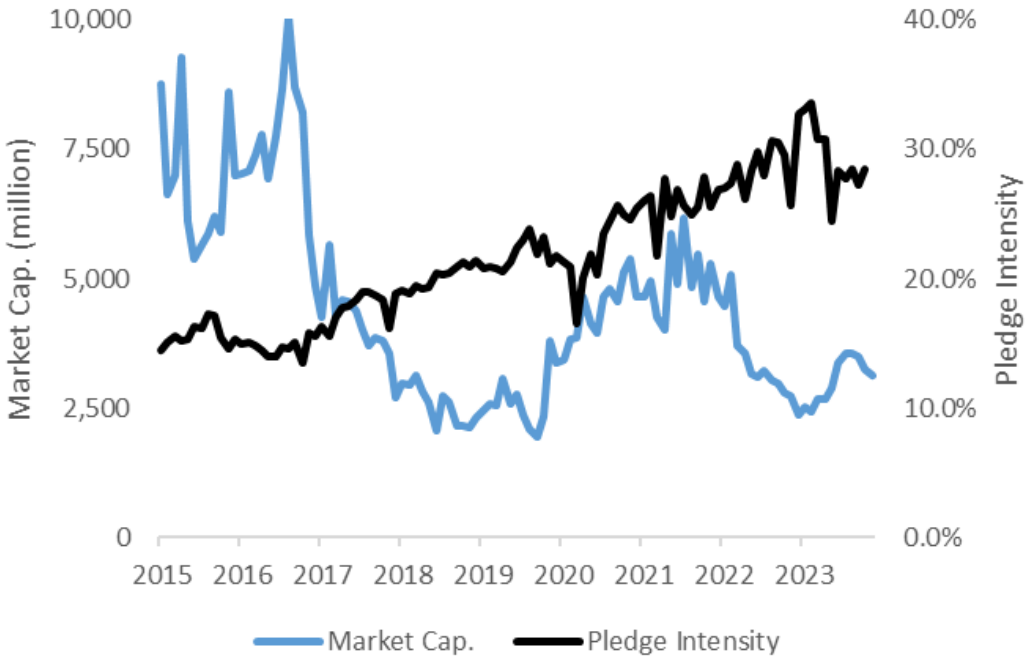
Stocks with the highest pledge ratio tend to be the same in each month, but there was a noticeable shift post-Covid.

- Overlap percentage is defined as the share of the stocks in Portfolio 5 (pledge intensity above the 95th percentile) last month that remain in Portfolio 5 this month. **The average overlap percentage is 92%.**
- The heatmap of stocks in Portfolio 5 shows that stocks with the highest pledge ratio post-Covid are different from before. However, highly pledged stocks are still likely to remain pledged in the next month.



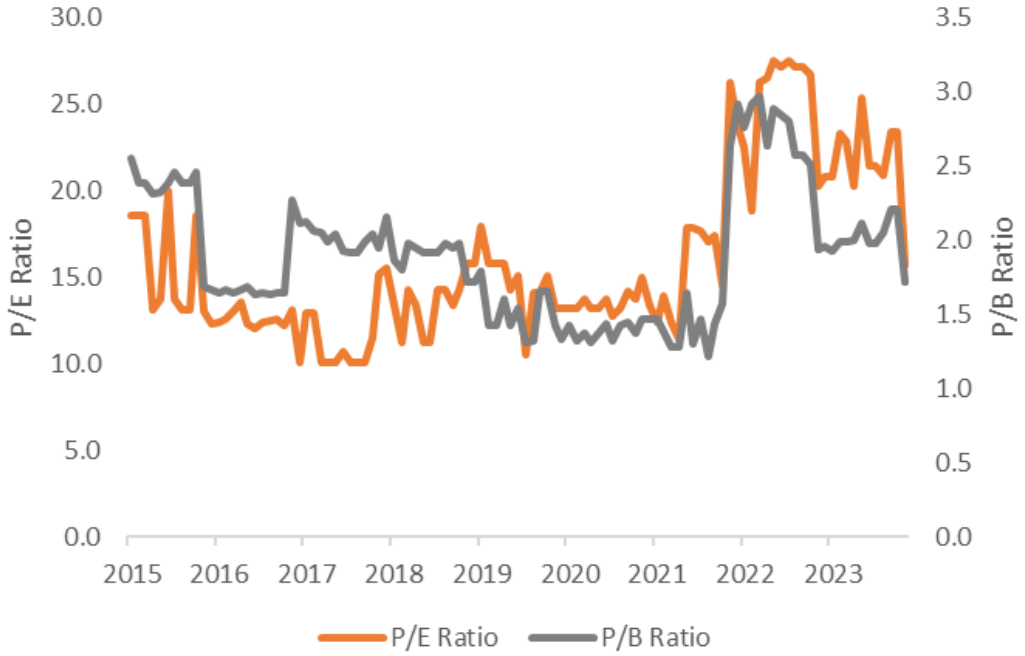


Stocks with the highest pledge ratio experience significant price increases, resulting in higher price multiples.



Note: Each line plot represents the median values.

On average, stocks in Portfolio 5 experience the greatest price increase, so the median stock in Portfolio 5 is also larger, as reflected in the market capitalization.



Note: Each line plot represents the median values.

While the market capitalizations of these stocks increased, their earnings and book value of equity did not catch up, resulting in higher P/E and P/B ratios.

Portfolios returns attribution using factors

$$m_{jt} = \alpha_j + \sum_k \beta_{jk} f_{kt} + \varepsilon_{jt}$$

Panel A: Fama-French Six-Factor Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	April 2020 - April 2022					May 2022 - June 2024				
	No pledge	<20th	20th-80th	80th-95th	>95th	No pledge	<20th	20th-80th	80th-95th	>95th
MKT	0.571***	0.926***	1.043***	1.334***	1.359***	1.012***	0.632***	1.128***	1.455***	1.349***
	[4.53]	[12.77]	[25.13]	[16.28]	[7.17]	[6.86]	[5.17]	[20.25]	[4.64]	[5.42]
SMB	0.002	0.030	-0.018	0.244	-0.044	0.528**	-0.406***	0.038	0.911**	0.731**
	[0.02]	[0.30]	[-0.33]	[0.88]	[-0.12]	[2.80]	[-2.84]	[0.81]	[2.29]	[2.15]
HML	0.382**	-0.243	-0.034	0.227	1.319**	0.603**	-0.563**	0.205*	-0.327	-0.313
	[2.54]	[-1.28]	[-0.51]	[0.75]	[2.74]	[2.25]	[-2.49]	[2.01]	[-0.64]	[-0.68]
RMW	0.298	-0.223	-0.077	0.460	1.321***	0.122	0.248	-0.162*	0.093	0.108
	[1.24]	[-0.99]	[-0.89]	[1.59]	[3.48]	[0.50]	[1.26]	[-1.87]	[0.18]	[0.31]
CMA	-0.038	0.617***	-0.227***	-0.161	-0.550	0.221	-0.355*	0.161**	0.144	-0.008
	[-0.37]	[5.96]	[-4.91]	[-0.65]	[-1.63]	[1.04]	[-1.92]	[2.80]	[0.31]	[-0.04]
UMD	-0.145	-0.207**	0.058	0.402*	0.402	-0.209**	0.090	-0.092**	0.284	0.186
	[-1.37]	[-2.60]	[1.19]	[1.99]	[1.60]	[-2.08]	[0.70]	[-2.47]	[0.70]	[1.31]
Alpha	0.002	-0.011**	0.003	0.006	0.035**	-0.005	0.006*	-0.001	-0.008	-0.023***
	[0.34]	[-2.46]	[1.30]	[0.62]	[2.38]	[-1.37]	[1.77]	[-0.59]	[-0.84]	[-4.45]
Adj. R-squared	0.838	0.923	0.985	0.829	0.731	0.501	0.813	0.943	0.515	0.749

The high-intensity pledge portfolio shows **increasing beta in both up and down-market cycles**.

High pledge ratio stocks tend to have high volatility. **They often start as value stocks with strong profitability. In the down cycle, we see signs of small-cap stocks that drag the portfolio's return down**.

FF model explains only 50% of the return, highlighting the need for additional factors to fully explain the performance of intense pledge portfolios.

Recap of findings

- **We find a negative relationship between pledge intensity and future stock returns,** possibly due to increased risk of forced sales and margin calls during market downturns. Contrary to previous studies, **we find no significant relationship between past stock returns and future margin usage**.
- During the period from April 2020 to April 2022, high-pledge-intensity stocks **experienced significant gains, amplified by the bullish market** conditions following the COVID-19 lockdowns. However, the **subsequent market downturn showed the heightened risk associated with leverage,** as these stocks suffered disproportionately large losses.
- Our portfolio analysis further shows that **pledge intensity is positively correlated with market betas**. This dynamic underscores the dual nature of leverage: while it can enhance gains in rising markets, it also amplifies losses in downturns, leading to greater volatility and risk for investors.

Our results emphasize the need for careful monitoring and regulation of leverage to mitigate potential risks to market stability (Brunnermeier and Pedersen, 2009).

- Our work uses **publicly available data** and find that **pledge intensity leads to lower average returns**, suggesting **investors can benefit from monitoring pledge intensity**.
- Limitation: **We do not know who pledge**, so **we cannot explore types of pledging** such as insider/outsider pledging (Shen, Wang, and Zhou, 2021), institutional investor pledging (Wang and Chou, 2018), cash-out pledging (Dou, Masulis, and Zein, 2019).
- However, **share pledging is not necessarily bad**. For example, **pledging can also signal the confidence** in the firms from stakeholders. **It is important for investor to be aware of this information** so that they can make more informed decisions. (like form 59-2 disclosure).