



Best Paper Award: Market Quality Track

SET Research Scholarship 2024/2025

“Does Observability of Downgrade Risk Matter for Corporate Investment?”

By

Thanwarat Limwattananukul, Master’s Degree, Faculty of Commerce and Accountancy, Chulalongkorn University

Research advisor: Assoc. Prof. Kanis Saengchote, Ph.D.

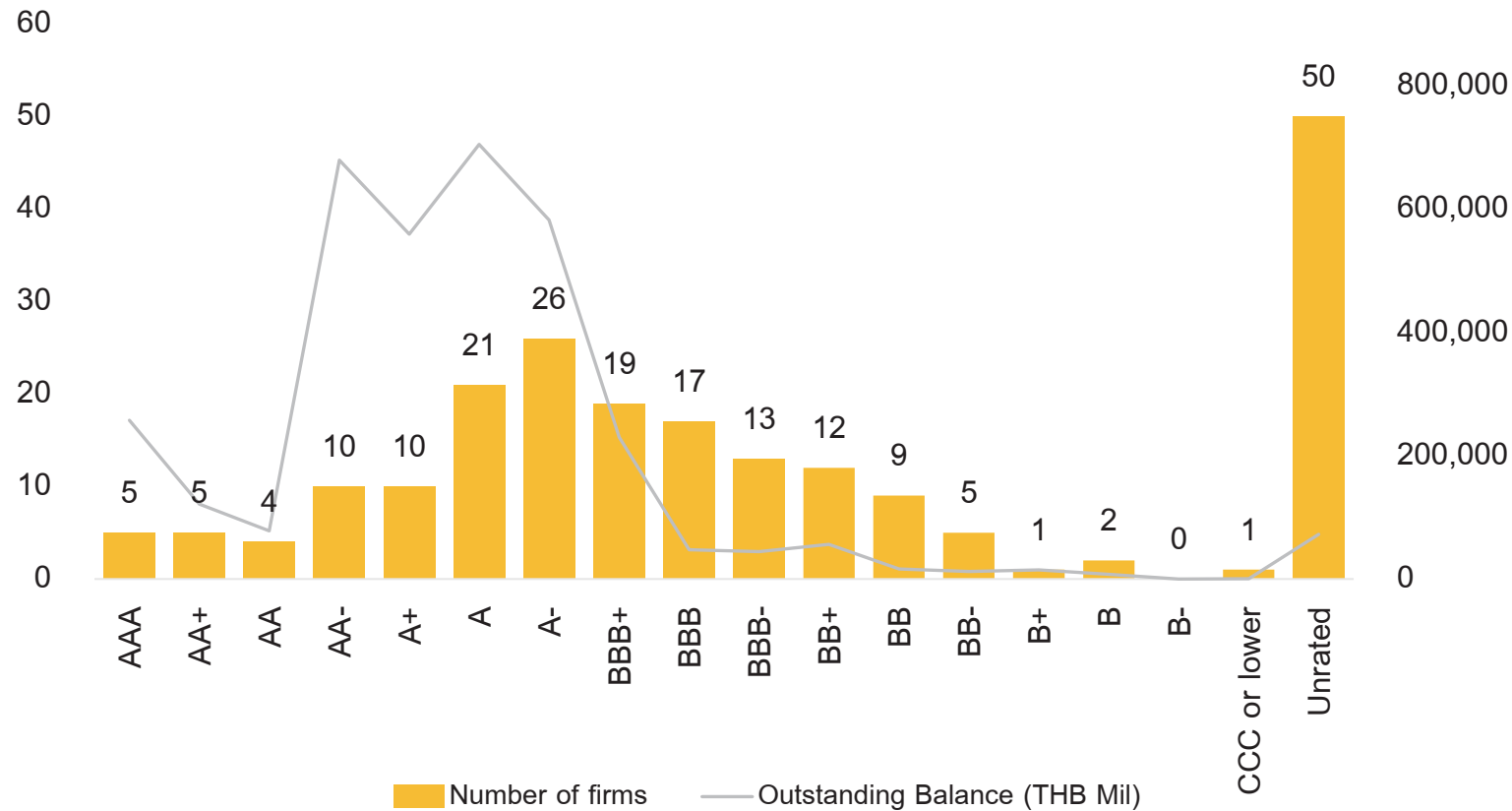
11 June 2025



Corporate bonds are an important source of financing.



Outstanding issues of listed companies, as of May 2025



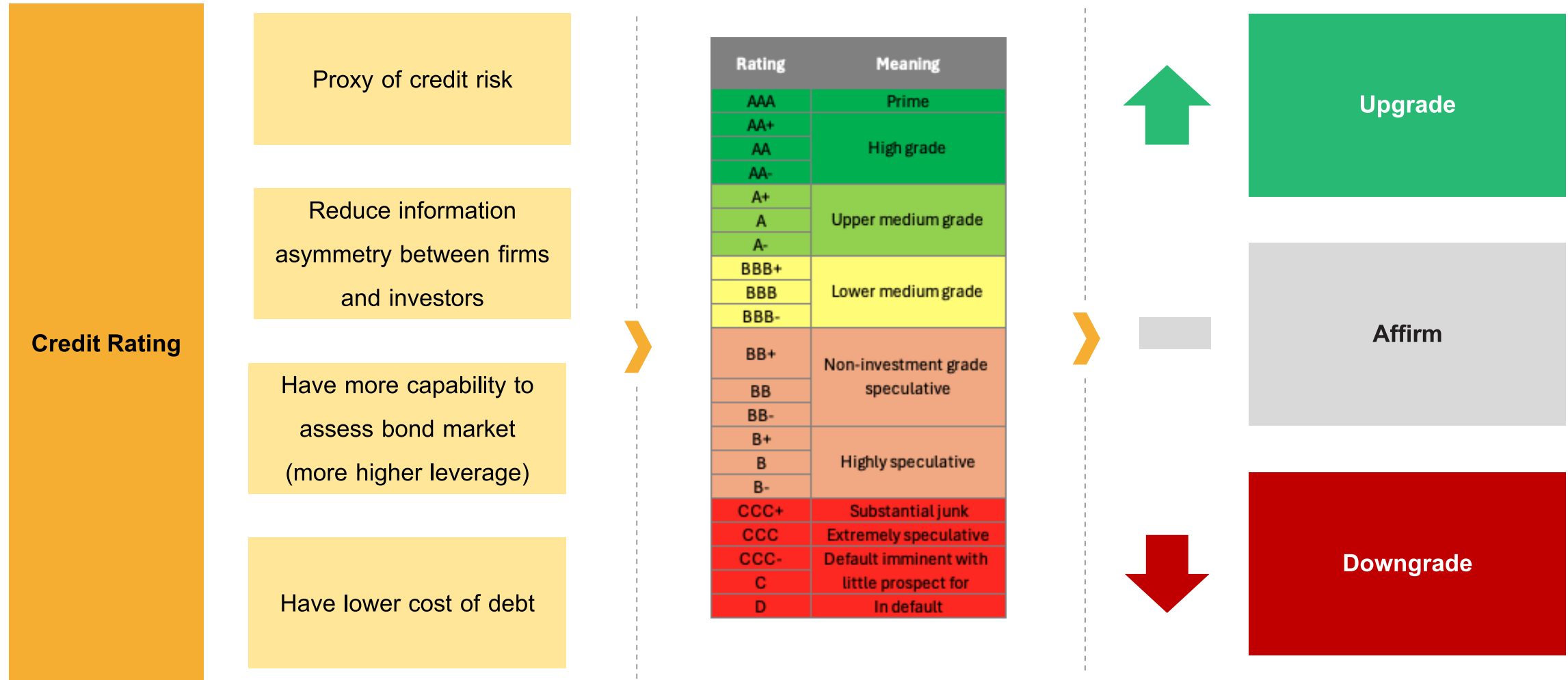
Credit rating	Number of firms	Outstanding (THB Mil)
AAA	5	257,480
AA	19	879,033
A	57	1,847,203
BBB	49	321,532
BB	26	84,353
B	3	21,705
CCC or lower	1	367
Unrated	50	80,187
Total	210	3,484,241

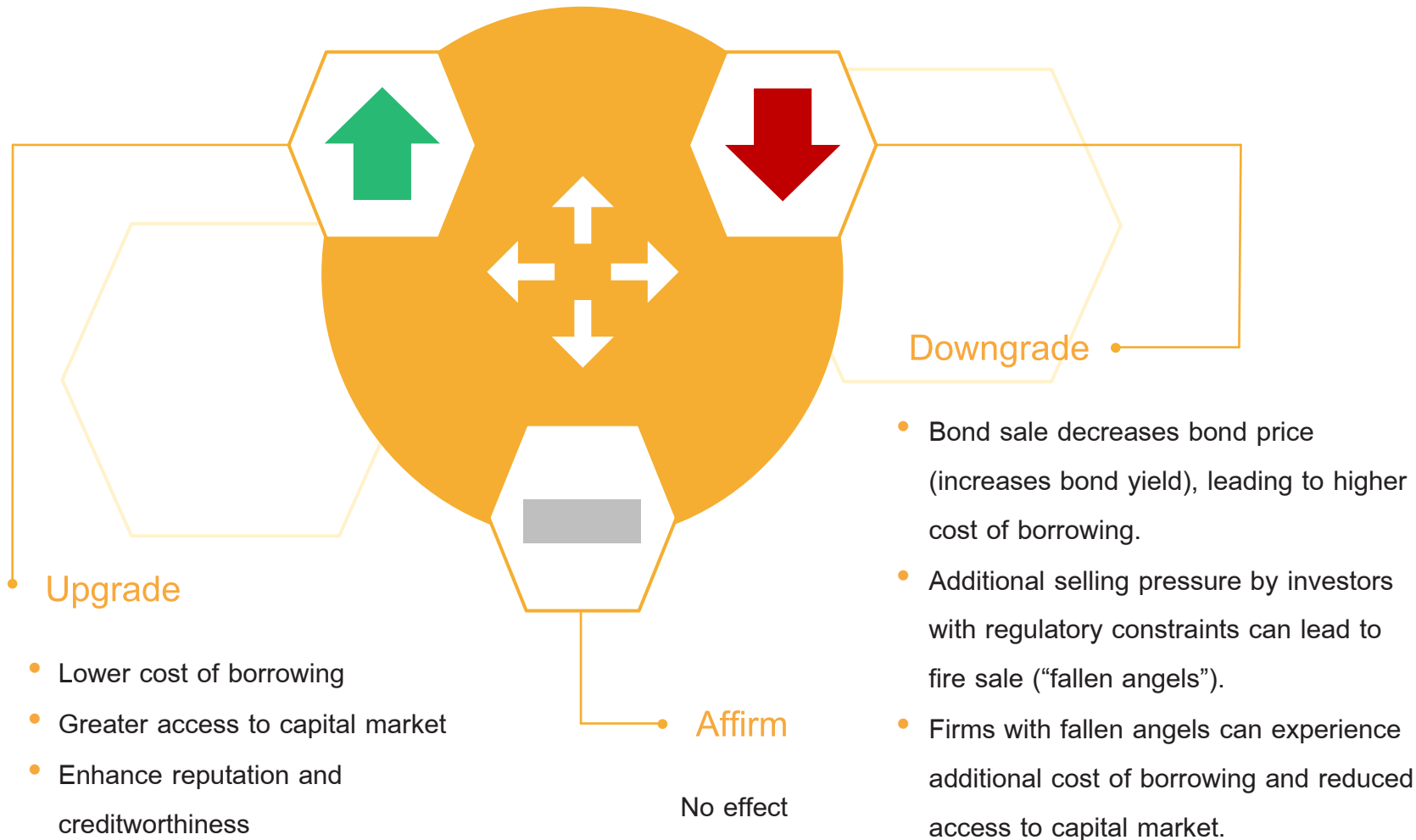
19% of GDP

Source: Thaibma



Credit ratings play an important role in the capital market.





- Consequently, firms try to avoid downgrades.
- Firms that face downgrade risk may be less likely to invest to avoid downgrade.
- **But if they are not rated (no observable rating), will their investment rate be influenced?**



Does observability of downgrade risk matter for corporate investment?

- Step 1: do **firms** influence their investment rate when their **credit rating** are near “investment grade” threshold?
- Step 2: generate synthetic credit rating for unrated firms
- Step 3: do **unrated firms** influence their investment rate when their **synthetic credit rating** are near “investment grade” threshold?

The rest of this presentation

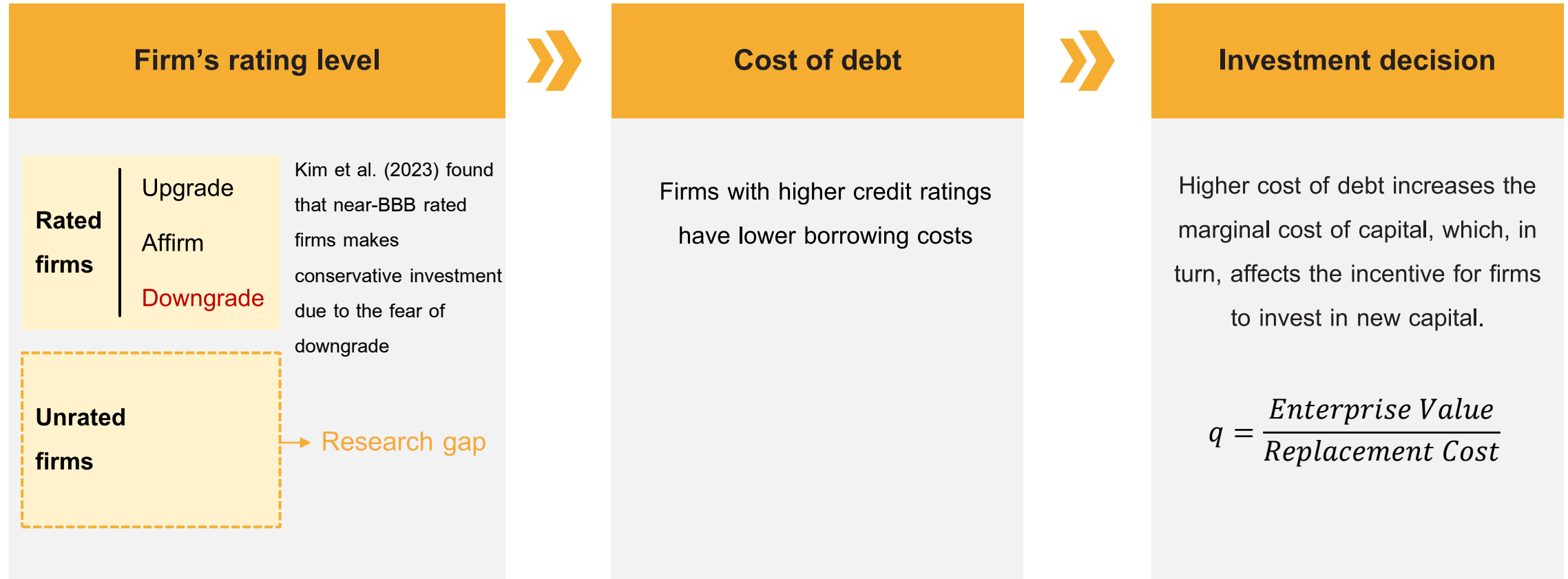
- Hypotheses development
- Data and methodology



The Tobin's q Theory of Investment can help explain why downgrade risk can influence investment rate.



Conceptual framework



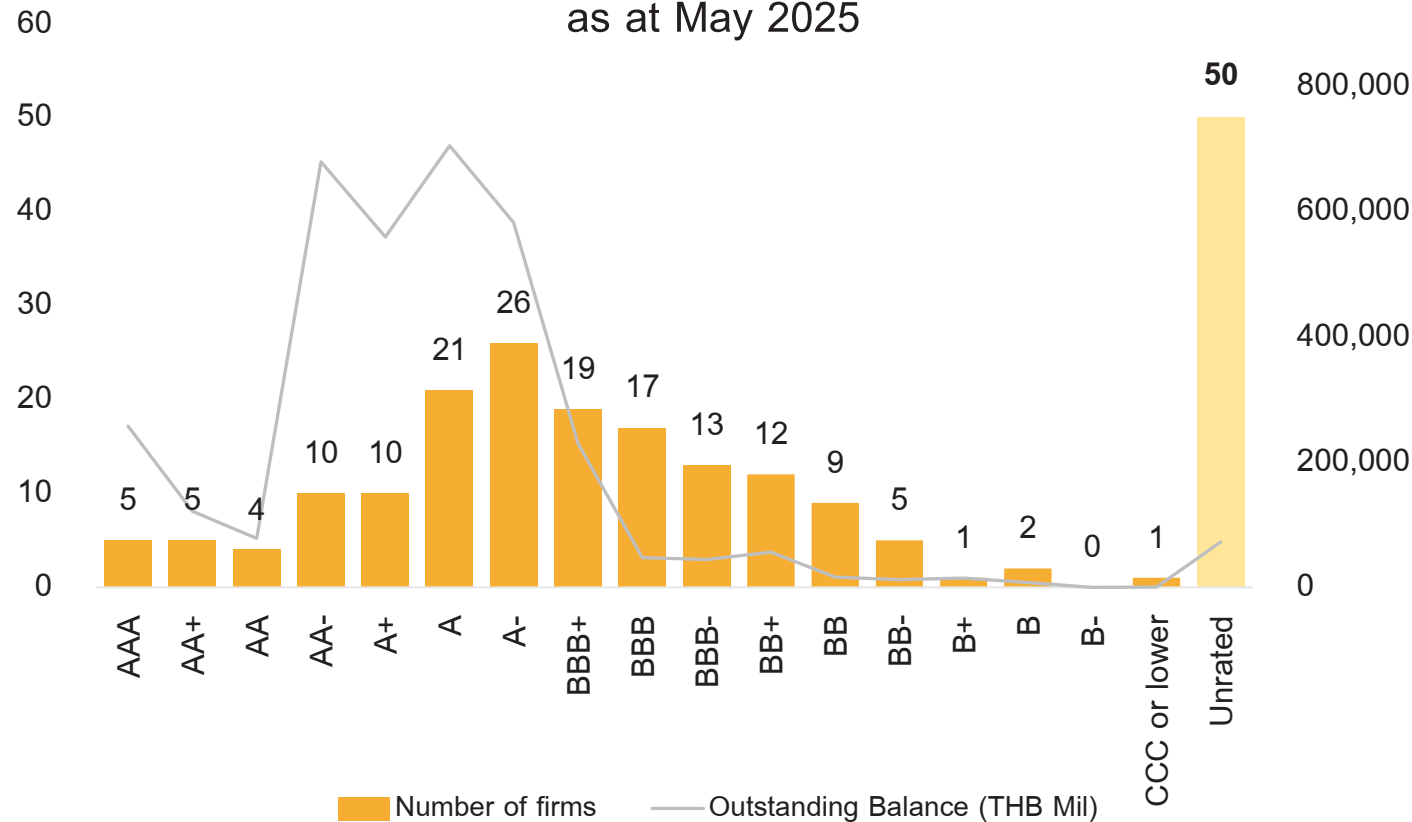


We focus on UNRATED firms (both issuers and non-issuers).



Corporate issue outstanding of listed company in Thailand

as at May 2025



Source: Thaibma

24%

of firms that issue corporate bonds do not receive assessment from credit rating agencies.

- As of May 2025, 50 of 210 issuers are unrated, and their bonds account for 2% of total issues. However, there are many more listed firms who do not issue bonds at all, and thus do not receive credit rating assessment.
- Credit rating is required for public offering. For other types of issues (II, UHNW, HUW), rating is voluntary.
- Credit rating is typically assessed based on the industry and firm characteristics, as well as existing leverage. Consequently, we can use a **statistical model** to assign a **synthetic rating** to unrated firms, even for **non-issuers**.



1

Rated Firms and Investment Rate

Credit ratings thresholds can influence investment rate of rated firms, particularly around the A and BBB rating levels (“investment grade” threshold).

2

MAIN CONTRIBUTION

UNRATED Firms and Investment Rate

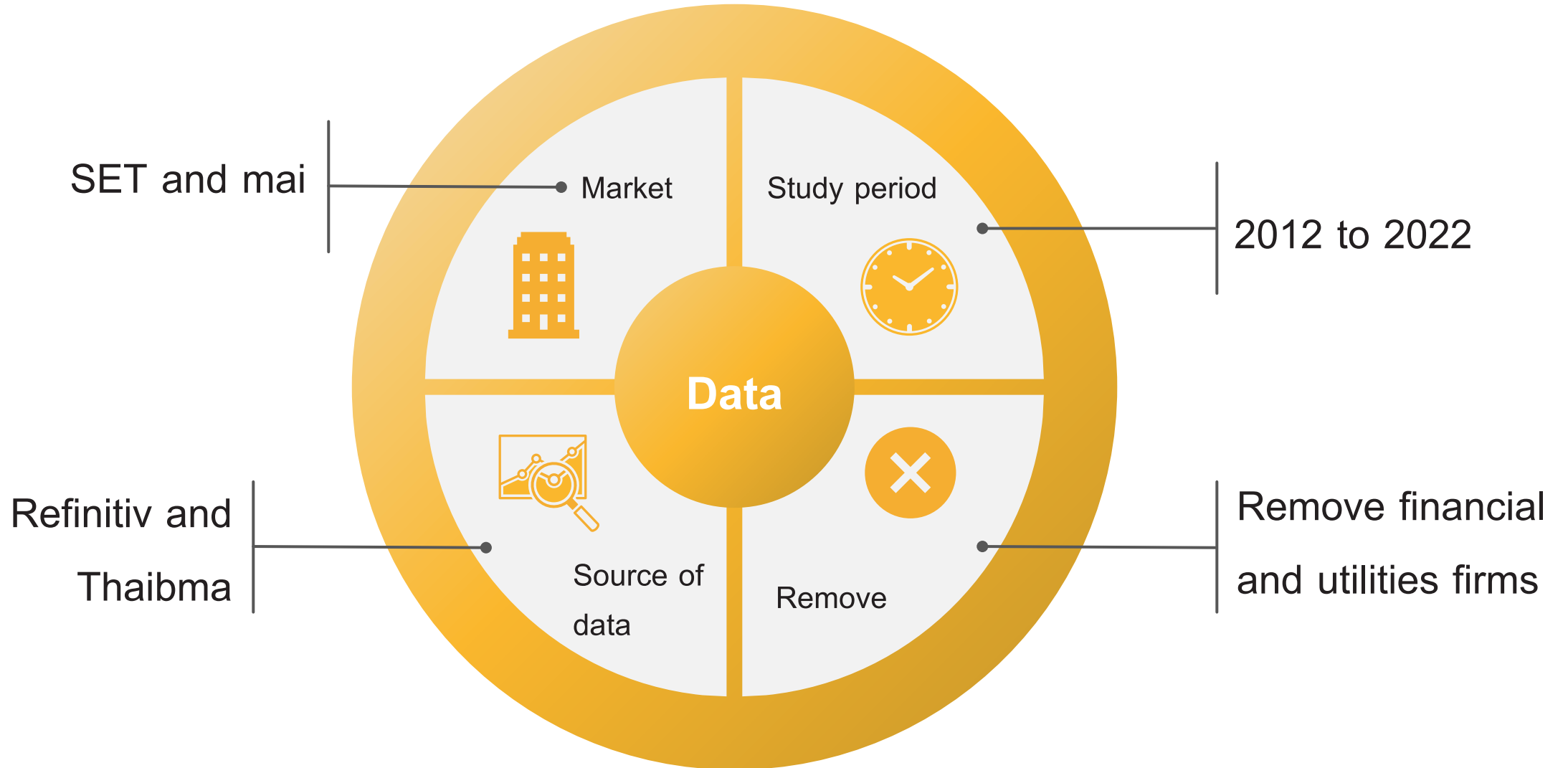
Synthetic ratings thresholds can influence investment rate of unrated firms, particularly around the A and BBB rating levels (investment grade threshold).

Theoretical Framework

Limited
Attention



Barber and Odean (2008) find that individuals have limited capacity to process information. Consequently, they tend to focus on the readily available information.





Step 1: do firms influence their investment rate when their credit rating are near non-investment grade threshold?

1

Investment regression model

1) Hypothesis I: Credit ratings thresholds can influence investment rate of rated firms, particularly around the A and BBB rating levels (“investment grade” threshold).

$$Invest_{i,t+1} = \beta_1 Rating_{it} + \beta_2 Interval_{it} + \beta_3 Rating_{it} \times Interval_{it} + \gamma X_{it} + \delta_i + \tau_t + \varepsilon_{it}$$

Variable	Description
Invest	Change in tangible assets (PPE + depreciation / lagged PPE)
Rating	Scalar value, where AAA rating takes value of 21 and the D rating takes value of 1
Interval	A dummy variable takes 1 where the rating belongs to specific range, otherwise zero
X	Control variables including change in cash, size, KZ index, MTB ratio, ROA, leverage, sales growth dividend ratio. Industry and year fixed effects also included.

2) Hypothesis II: *Synthetic ratings* thresholds can influence investment rate of unrated firms, particularly around the A and BBB rating levels (investment grade threshold).

- Use the synthetic credit rating with the same investment regression model.

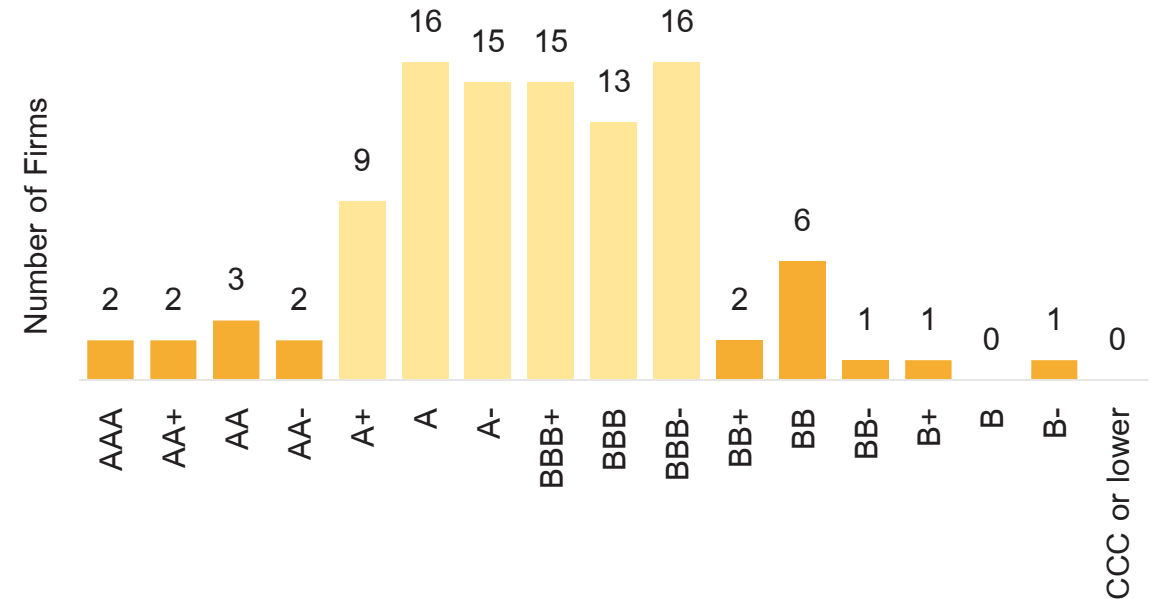
Why we focus on near-A and near-BBB threshold



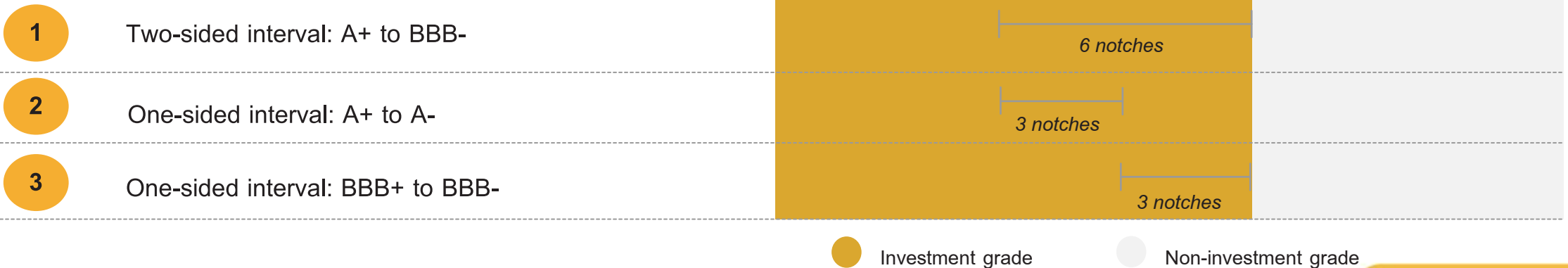
We focus on the ratings near the **A-to-BBB threshold** because investors with regulatory constraints prefer “investment grade” bonds.



In Thailand, many institutional investors sell bonds once they are downgraded below the **A threshold**, stricter than the common threshold of BBB. (The “de jure” threshold).



We study both two-sided and one-sided intervals.





Result: Hypothesis I – rated firms



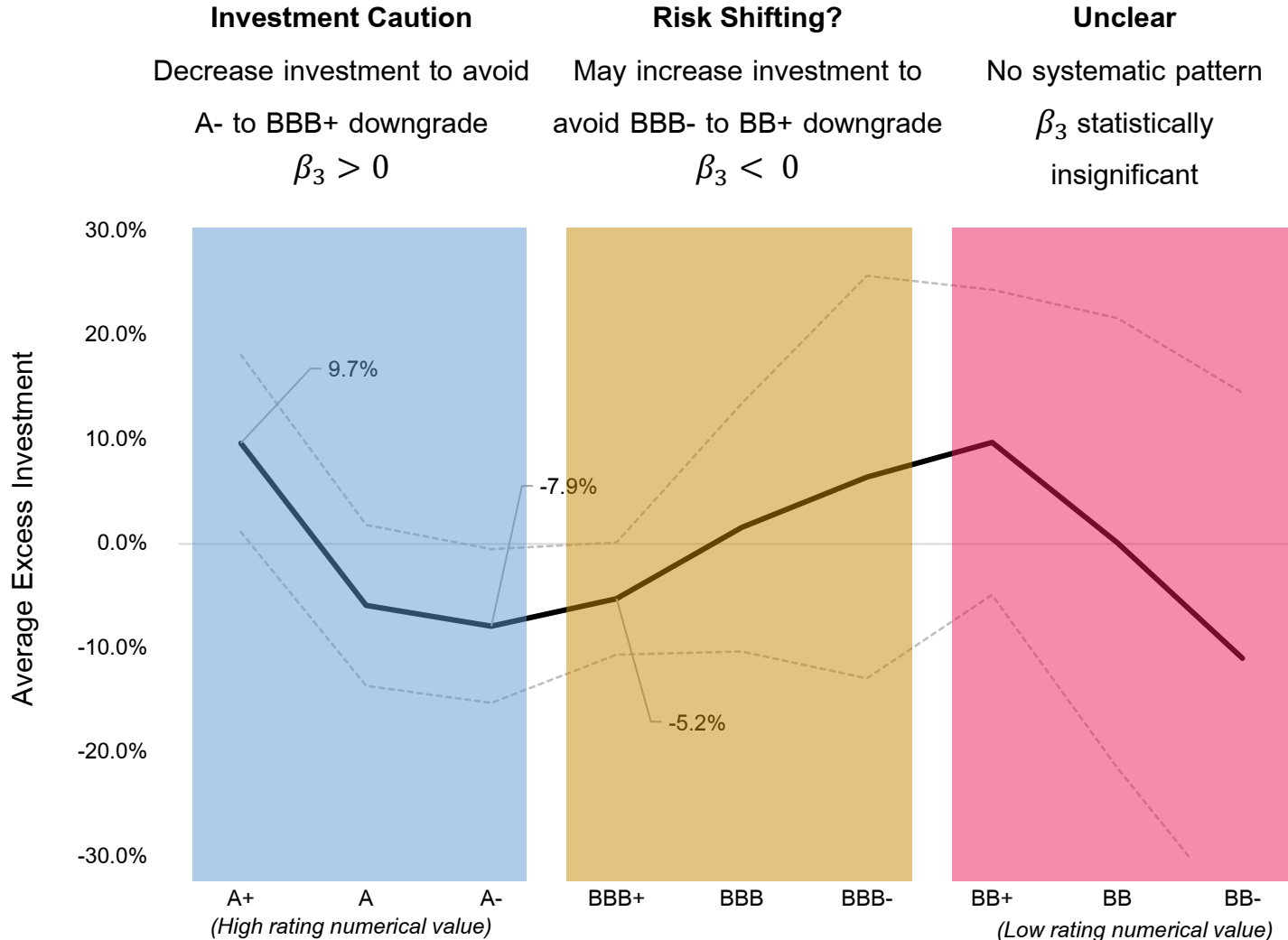
Hypothesis I: Credit ratings thresholds can influence investment rate of rated firms, particularly around the A and BBB rating levels (investment grade threshold).

$$Invest_{i,t+1} = \beta_1 Rating_{it} + \beta_2 Interval_{it} + \beta_3 Rating_{it} \times Interval_{it} + \gamma X_{it} + \delta_i + \tau_t + \varepsilon_{it}$$

- In column 2, β_3 is statistically insignificant. Either there is no relationship, or the relationship is non-monotonic.
- In column 3, β_3 is **positive and statistically significant at 5% level**. Firms tend to cut investments as their ratings approach A-, consistent with the “de facto” threshold used by Thai institutional investors.
- In column 4, β_3 is **negative and statistically significant at 5% level** shows that firms increase their investments as rating declines. This may be related to risk shifting, where firms take on riskier investment when they are at risk of default, leading to increased investment.
- Our results show that the de facto A threshold influences Thai firms’ behaviors.

	(1)	(2)	(3)	(4)
	None	Two-sided A+ BBB-	One-sided A+ A-	One-sided BBB+ BBB-
Rating	-0.00249 (0.0207)	0.000488 (0.0185)	-0.00217 (0.0189)	0.00368 (0.0191)
Interval		0.131 (0.320)	-1.563** (0.625)	0.986** (0.456)
Rating * Interval		-0.0130 (0.0218)	0.0950** (0.0384)	-0.0738** (0.0328)
Change in Cash	1.764* (1.050)	1.744* (1.052)	1.805* (1.061)	1.765* (1.060)
Size	-0.0358 (0.0312)	-0.0341 (0.0329)	-0.0383 (0.0318)	-0.0330 (0.0333)
Kaplan-Zingales Index	-0.00949*** (0.00202)	-0.00969*** (0.00207)	-0.00990*** (0.00214)	-0.00944*** (0.00201)
Market-to-Book Ratio	0.0505** (0.0239)	0.0478** (0.0241)	0.0510** (0.0241)	0.0470* (0.0242)
Return on Assets	-0.438 (0.754)	-0.333 (0.774)	-0.400 (0.774)	-0.450 (0.764)
Leverage	-0.0659 (0.239)	-0.0308 (0.228)	-0.0664 (0.233)	-0.0452 (0.238)
Sales Growth	-0.116 (0.188)	-0.119 (0.190)	-0.123 (0.191)	-0.107 (0.190)
Dividend Ratio	-0.0137 (0.0305)	-0.0114 (0.0288)	-0.0102 (0.0297)	-0.00749 (0.0228)
Industry Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	870	870	870	870
Adjusted R-squared	0.139	0.183	0.187	0.140

The residual plot shows a non-monotonic relationship.



Note: the dotted lines are the 95% confidence interval around the mean

$$Invest_{i,t+1} = \gamma X_{it} + \delta_i + \tau_t + \epsilon_{it}$$

- We analyze the residuals ϵ_{it} from column 1 around the key rating ranges. The residuals can be thought of as the **excess investment** unexplained by the independent variables and fixed effects.
- For ratings A+ to A-, the average excess investment is declining, consistent with the positive β_3 . Firms tend to cut investments as their ratings approach A-, the lower bound of rating for Thai institutional investors to hold bonds.
- For ratings BBB+ to BBB-, the average excess investment is increasing, consistent with the negative β_3 . Firms tend to increase investment to avoid downgrade.
- For ratings BB+ to BB- (in the appendix), the variations in average excess investment is idiosyncratic, consistent with a statistically insignificant β_3 .

Note: The coefficients have the opposite sign to the slope because higher ratings are assigned higher numerical values. Thus, as the rating improves, excess investment (as indicated by positive coefficient in the A range) also increases, and vice versa.



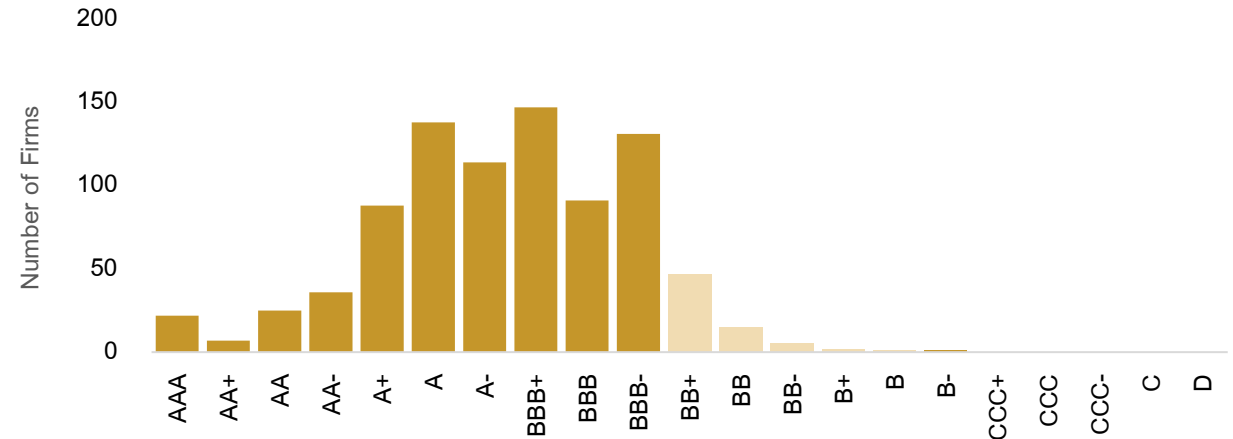
Step 2: generate synthetic credit rating for unrated firms.

2 Synthetic rating model

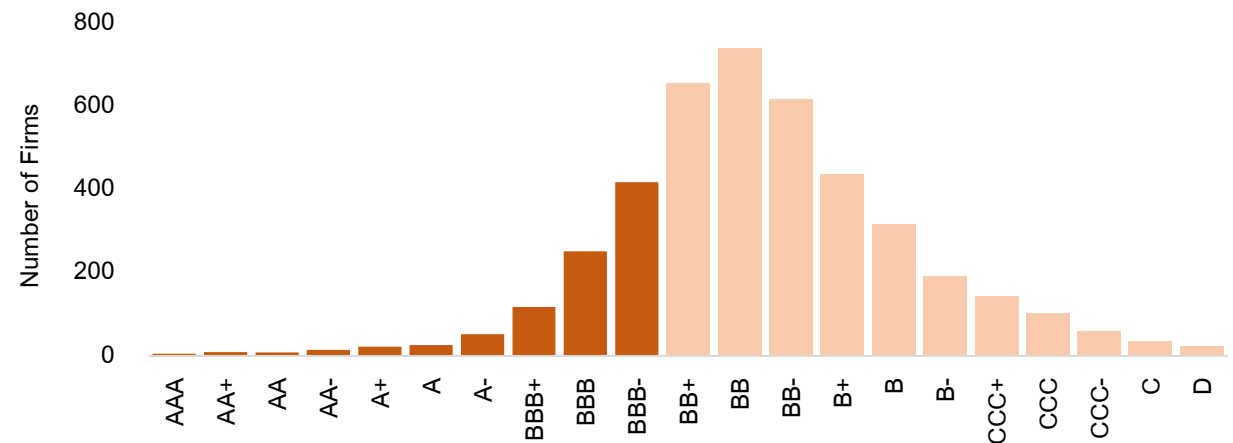
- Employ six new variables, defined in alignment with S&P rating criteria (Standard and Poor's, 2008), which are size, interest coverage ratio (ICR), total debt leverage, dividend payer, operating margin, and market to book value of equity.
- Cross-sectional regression for each year.
- Use the estimated coefficient to predict the synthetic credit ratings for unrated firms.

- Unrated firms tend to have lower ratings compared to rated firms.
- The distribution of synthetic ratings is more symmetrical because of the nature of the statistical model.
- Note: synthetic rating is assigned to **BOTH** issuers and non-issuers.

Actual Rating For Rated Firms



Synthetic Rating For Unrated Firms





MAIN RESULT: Hypothesis II – unrated firms



Hypothesis II: Synthetic ratings thresholds can influence investment rate of unrated firms, particularly around the A and BBB rating levels (investment grade threshold).

$$Invest_{i,t+1} = \beta_1 Rating_{it} + \beta_2 Interval_{it} + \beta_3 Rating_{it} \times Interval_{it} + \gamma X_{it} + \delta_i + \tau_t + \varepsilon_{it}$$

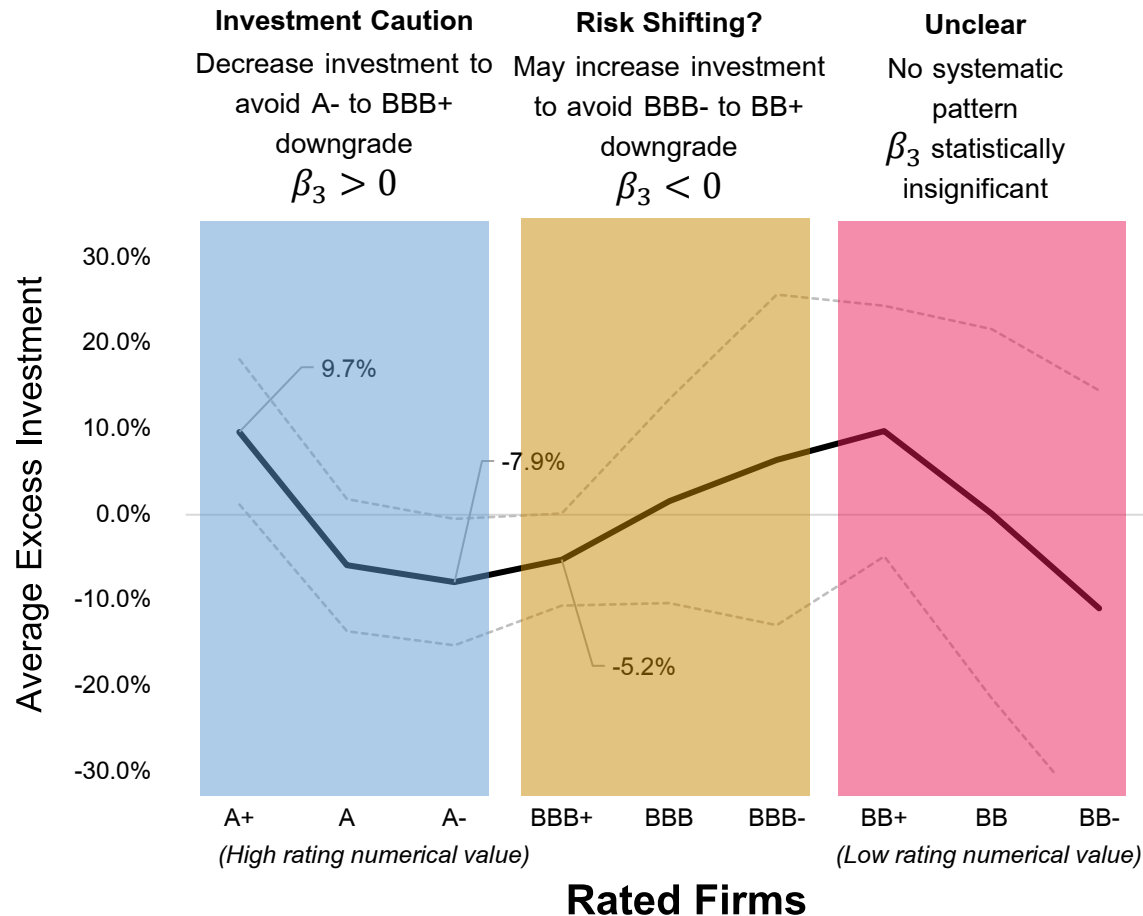
- β_3 is **statistically insignificant** for columns 2, 3 and 4, contrary to the prediction of Hypothesis II.
- “Unobservable downgrade” risk from A- to BBB+ does not influence firms’ investment rates.
- The analyses are also repeated for unrated issuers and unrated non-issuers. The results are robust: firms do not respond to unobservable downgrade risk.

	(1)	(2)	(3)	(4)
	None	Two-sided A+ BBB-	One-sided A+ A-	One-sided BBB+ BBB-
Synthetic Rating	-0.000562 (0.00274)	-0.00266 (0.00312)	-0.00128 (0.00295)	-0.00128 (0.00283)
Interval		0.00500 (0.0888)	0.201 (0.294)	0.179 (0.154)
Synthetic Rating * Interval		-0.00503 (0.00922)	-0.0378 (0.0457)	-0.0222 (0.0159)
Change in Cash	0.533*** (0.104)	0.530*** (0.104)	0.533*** (0.104)	0.531*** (0.104)
Size	-0.0128* (0.00663)	-0.0165** (0.00671)	-0.0126* (0.00674)	-0.0160** (0.00672)
Kaplan-Zingales Index	-0.00516*** (0.000726)	-0.00522*** (0.000720)	-0.00516*** (0.000725)	-0.00521*** (0.000723)
Market-to-Book Ratio	0.0282*** (0.00449)	0.0295*** (0.00454)	0.0284*** (0.00449)	0.0288*** (0.00455)
Return on Assets	-0.0939 (0.103)	-0.108 (0.00454)	-0.0943 (0.102)	-0.0999 (0.103)
Leverage	-0.0777** (0.0363)	-0.0757** (0.0364)	-0.0792** (0.0368)	-0.0734** (0.0363)
Sales Growth	0.0512** (0.0234)	0.0509** (0.0234)	0.0511** (0.0235)	0.0513** (0.0234)
Dividend Ratio	-0.0121* (0.00688)	-0.0121* (0.00686)	-0.0118* (0.00686)	-0.0124* (0.00687)
Industry Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	4235	4235	4235	4235
Adjusted R-squared	0.139	0.141	0.140	0.141

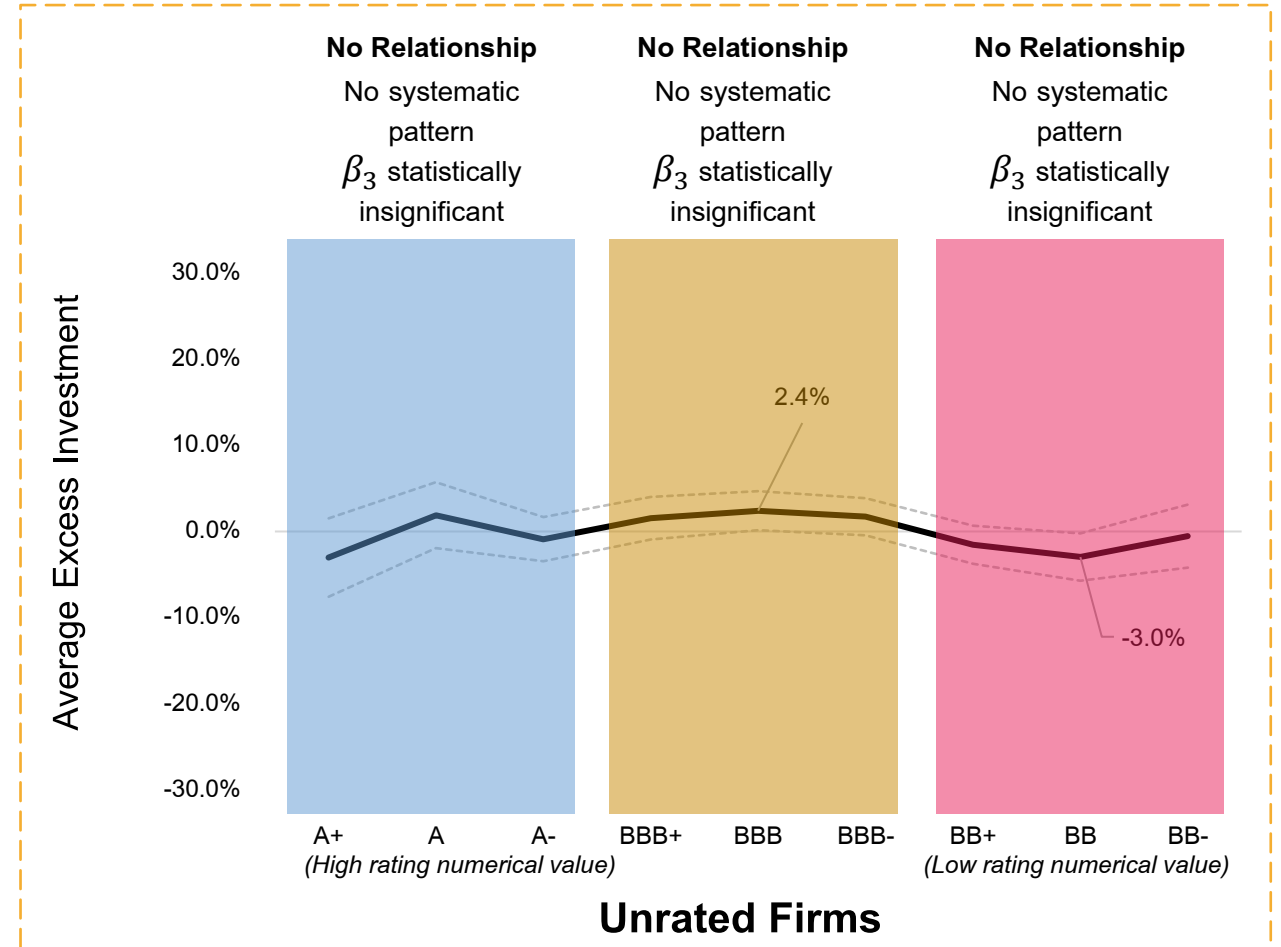
The residual plot for unrated firms also confirm the result.

$$Invest_{i,t+1} = \gamma X_{it} + \delta_i + \tau_t + \epsilon_{it}$$

- We analyze the residuals ϵ_{it} from column 1 around the key rating ranges. The residuals can be thought of as the **excess investment** unexplained by the independent variables and fixed effects.



Note: the dotted lines are the 95% confidence interval around the mean





Rated Firms

- Rated firms, particularly those near the A threshold tend to **reduce investment** because Thai institutional investors are forced to sell bonds once they are downgraded to BBB ratings.
- This is consistent with Korean firms in Kim et al. (2023), but meaningful threshold in Thailand is **A-, not BBB-**.

Average leverage in our sample:

- Rated firms with corporate debt **41.4%**
- Unrated firms with corporate debt **43.4%**
- Unrated firms without corporate debt **23.5%**



Unrated Firms

- “Out of sight, out of mind.” Without ratings, unrated firms cannot be, downgraded and thus are not pressured by the risk.
- Without the pressure of maintaining a publicly observable credit rating, these firms **enjoy greater flexibility in their investment decisions** (Diamond, 1991), but they can also pursue investments more aggressively.
- Note: non-issuers have less access to credit as evident in lower leverage, so the debt capital market is important for fundraising (Faulkender and Petersen, 2006).



Policymakers

- Credit ratings act as both a disciplining tool and a signaling mechanism, shaping firm behavior to preserve financial stability.
- Transparency in credit risk plays a crucial role in shaping financial strategies, with unrated firms potentially using their lack of transparency to bypass the restraints imposed by observable downgrade risks.
- **Credit ratings are useful and should be encouraged.** Policymakers may wish to pay more attention to unrated issuers.



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