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Research on the Market Reaction to the Extension of CIFI Group's Dollar Perpetual Bonds

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Abstract: As a hybrid financing instrument integrating debt and equity features, perpetual bonds are widely used among real estate enterprises in China. However, amid industry downturns and tightening financing conditions, the frequent "extension" of perpetual bonds has drawn significant market attention. This paper takes the extension of CIFI Group's US dollar perpetual bond in August 2022 as the research subject and employs the event study method to analyze both the short-term and long-term market reactions. The findings reveal that on the announcement date of the extension, the market reaction was moderate with a positive abnormal return, mainly due to prior policy measures and market expectation management. However, in the long run, the cumulative abnormal return over the 40 months following the extension remained negative, indicating a continuous deterioration in market confidence in the company's solvency and corporate governance. This study highlights the market signaling effect of "forced extension" in perpetual bonds and provides insights for investors in risk identification and for enterprises in financing decisions.

Keywords: Perpetual Bonds; Extension of Perpetual Bonds; Market Reaction Study; US Dollar Bonds of Real Estate Enterprises; Chinese Enterprises.

1. Introduction

Since the introduction of perpetual bonds to China in 2013, their issuance scale has grown rapidly, particularly in highly leveraged industries such as real estate. A key feature of perpetual bonds is that the issuer holds the right to extend the bond and the right to defer interest payments, allowing them to be classified as equity instruments under specific accounting conditions, thereby optimizing corporate financial statements. However, as market practices deepen, the number of perpetual bond extension events has gradually increased. According to a research report by TF Securities, by the end of 2025, the cumulative number of perpetual bond extension events in China had exceeded 70, involving an issuance amount of over RMB 100 billion.

Although the extension of perpetual bonds is a contractual right granted to the issuer, it often becomes an "effective passive choice" amid credit deterioration, sending negative signals to the market. Existing research has paid insufficient attention to the market reaction to perpetual bond extensions, especially the lack of systematic tracking of the long-term market effects of US dollar perpetual bonds, a special type. This paper takes the extension of CIFI Group's (00884.HK) US$300 million perpetual bond in August 2022 as the research subject, employing the event study method to analyze both short-term and long-term market reactions. The aim is to address the following questions: How does the market interpret the extension of perpetual bonds? Are there differences between short-term and long-term reactions? What are the key factors influencing market reactions?

2. Theoretical Foundation and Research Hypotheses

2.1 Literature Review

Kühn and van Schaik [1] studied the pricing of convertible perpetual bonds from a credit risk perspective, noting that the perpetual nature of such bonds makes them more sensitive to credit risk, essentially positioning them as a financial instrument between ordinary bonds and preferred shares. Mjøs and Persson [2] further analyzed callable perpetual bonds with a protection period, arguing that the design of the call option allows perpetual bonds to exhibit characteristics of equity instruments under certain conditions.

From the perspective of financing costs, Wang and Nie [3] conducted an empirical analysis

based on issuers' extension behavior to study the pricing of call options on perpetual bonds. They found that refinancing costs are a key factor influencing issuers' extension decisions; when market interest rates rise and refinancing costs exceed the original bond's interest rate, issuers tend to choose extension. Yu et al. [4] further examined the issuance costs of perpetual bonds from the perspective of penalty interest provisions, finding that the magnitude of penalty interest significantly affects issuance costs and consequently influences issuers' extension decisions—higher penalty interest strengthens issuers' motivation to redeem at the first call date, but when refinancing costs are higher, issuers may still be forced to extend. Nishihara et al. [5] found in their latest study that there is a dynamic relationship between investment, financing, and strategic debt service, and that a firm's choice to extend debt is often the result of a deliberate trade-off between current debt servicing pressure and future growth opportunities.

In terms of international markets, Jun et al. [6], based on a study of the Korean market, found that the issuance of perpetual securities has a significant impact on stock prices, and that the market reacts more sensitively to perpetual securities with extension clauses—a finding that corroborates the conclusions of Wu [7] in her study on Chinese real estate firms. Liu and Liu [8] studied the market acceptance of perpetual bonds issued by Chinese commercial banks and found that investor acceptance depends on the issuer's creditworthiness and the bond's terms, with investors demanding higher premiums when credit risk is higher. This provides a reference for understanding the changes in credit risk following the extension of perpetual bonds.

In international research, Barone [9] explained the factors influencing credit ratings through a structural model of perpetual debt, finding that extension behavior is often accompanied by negative adjustments in credit ratings. Mjøs and Persson[2] analyzed callable risky perpetual debt with a protection period, pointing out that the choice between redemption and extension has an important impact on a firm's cost of capital and risk exposure. Anonymous in its rating of CSN's perpetual bonds, reflected rating agencies' assessment of the credit risk of such bonds, with downgrades often accompanying extension events—consistent with the findings of Barone [9]. Mathew and Sivaprasad [10], in their empirical analysis of sustainability bonds, showed that ESG factors are becoming a new dimension influencing the issuance of perpetual bonds, offering new directions for innovation in this area. The case of Gazprom preparing to issue perpetual bonds demonstrates the appeal of this financing instrument to international energy companies. ÖNCÜ [11] explored an innovative scheme in India to address the problem of non-performing banks using zero-coupon perpetual bonds, expanding the application scenarios of perpetual bonds.

2.2 Signaling Theory and Perpetual Bond Extension

Signaling theory suggests that in markets characterized by information asymmetry, insiders of a firm can convey signals about the firm's quality to outsiders through specific actions. Wang and Nie [3] classify perpetual bond extensions into two types, each carrying distinctly different signaling implications: favorable-condition extensions are proactively initiated by high-quality firms, sending a positive signal to the market; credit-deterioration extensions are passively initiated by firms facing financial distress, sending a negative signal to the market.

The extension event of CIFI Group in 2022 is a typical case of a "credit-deterioration extension." Against the backdrop of a deep adjustment in the real estate industry and the near-freezing of offshore financing channels, the company faced cash flow pressure and refinancing difficulties, forcing it to choose extension. The interest rate surged significantly from 5.375% to 11.581%, an increase of up to 620 basis points. According to signaling theory, this decision should convey a negative signal to the market.

2.3 Research Hypotheses on Market Reaction

Based on the above analysis, this paper proposes the following hypotheses:

H1: The announcement of a perpetual bond extension has a negative impact on stock prices in the short term, manifested as a significant negative abnormal return.

H2: Following the extension of a perpetual bond, the long-term market reaction remains negative, manifested as a significant negative buy-and-hold abnormal return.

H3: Market reactions are moderated by factors such as prior policy measures and expectation management.

3. Research Design

3.1 Case Selection

First, the extension of CIFI Group's US$300 million perpetual bond is a representative case. On August 24, 2022, CIFI Group announced the exercise of its extension option on a US$300 million perpetual bond issued in 2017, with the coupon rate jumping from 5.375% to 11.581%, an increase of 620 basis points—a rare magnitude of interest rate jump among credit-deterioration extensions. Second, as a listed company, CIFI Group adheres to standardized information disclosure, and its stock price and financial data are publicly accessible. Finally, more than three years have passed since the extension event, providing a sufficiently long time span to track long-term market reactions.

3.2 Event Date and Window Selection

This paper takes August 24, 2022, the date when CIFI Group announced the extension of the "XS1653470721" perpetual bond, as the event date (t=0). The announcement formally disclosed that the company exercised its extension option on the US$300 million "XS1653470721" perpetual bond issued in 2017, opting not to redeem the principal, with the coupon rate reset from 5.375% to 11.581%.

For the short-term market reaction study, this paper selects 15 trading days before and after the event date as the event window, i.e., [-15, 15] (August 3, 2022, to September 15, 2022). After excluding suspension days and non-trading days, this yields a total of 21 trading days. The 120 trading days prior to the event date are selected as the estimation window for estimating expected returns. Thus, the estimation window is set from February 7, 2022, to August 2, 2022, i.e., [-135, -16].

For the long-term market reaction study, this paper selects the period from the event date, August 24, 2022, to December 31, 2025, as the event window, i.e., [0, 700], comprising a total of 701 trading days.

4. Empirical Results Analysis

4.1 Short-Term Market Reaction Analysis

The event study method evaluates the direction and intensity of the market's reaction to a specific event by calculating the abnormal return (AR) and cumulative abnormal return (CAR) within the event window.

This paper adopts the market model approach, constructing a mathematical model linking stock prices to market elements. Based on historical data, regression analysis is used to estimate the impact of certain market factors on stock prices. Using the closing prices of CIFI Group during the estimation window and the closing prices of the Hang Seng Index, this paper calculates the stock return Rit of CIFI Group and the market return Rmt of the Hang Seng Index. A regression analysis is then conducted using data from the estimation window [-135, -16] to obtain the regression parameters to be estimated, thereby establishing the relationship between expected returns and market returns. For CIFI Group, this paper selects the Hang Seng Index as the market return.

The specific formulas are as follows:

$$R_{it} = \alpha + \beta R_{mt} + \varepsilon \quad (1)$$

$$E(R_{it}) = \alpha + \beta R_{mt} \quad (2)$$

Where:

Rit denotes the individual stock return of CIFI Group on day t;

E(Rit) denotes the expected return;

Rmt denotes the market return of the Hang Seng Index on day t;

α and β are the regression parameters to be estimated;

ε is the random error term.

Based on the above formulas and the specific values exported from Choice Financial Terminal, regression calculations were performed using Excel. The parameters were estimated as α=2.224 and β=-0.0013 (as shown in the figure 1 below). Thus, the relationship between expected return and market return is expressed as E(Rit)=2.224Rmt−0.0013, with a coefficient of determination R2=0.4242. The data indicate a positive correlation between the stock price of CIFI Group and the Hang Seng Index, and the goodness of fit is within an acceptable range. Therefore, the correlation of this linear regression equation is reasonable, and the model is relatively robust. The linear fit is shown in the figure 1 below.

Using the relationship formula between expected return and market return, E(Rit)=2.224Rmt−0.0013, the Hang Seng Index return Rmt during the event window [-15, 15] can be substituted into this equation to obtain the expected return E(Rit) of CIFI Group.

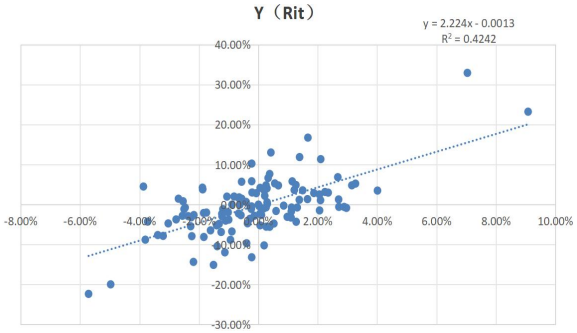

Figure 1. Regression Model of CIFI Group and Hang Seng Index Returns

Then, by subtracting the expected return E(Rit) from the actual return Rit of CIFI Group during the window period, the abnormal return and cumulative abnormal return for CIFI Group within the event window are derived. The calculation formulas are as follows:

$$AR_t = R_{it} - E(R_{it}) \quad (3)$$

$$CAR_t = \Sigma AR_t \quad (4)$$

Where:

ARt is the abnormal return;

CARt is the cumulative abnormal return.

The calculation results are shown in the table 1 below:

Table 1. Abnormal Returns and Cumulative Abnormal Returns of CIFI Group during the Event Window [-15, 15]

Window Period	Actual Return	Market Return	Expected Return	AR	CAR
t=-15	-2.48%	0.40%	0.75%	-3.22%	-3.22%
t=-14	0.51%	2.06%	4.45%	-3.94%	-7.17%
t=-13	6.06%	0.14%	0.18%	5.88%	-1.28%
t=-12	-1.43%	-0.77%	-1.85%	0.42%	-0.86%
t=-11	-1.93%	-0.21%	-0.60%	-1.33%	-2.19%
t=-10	-4.93%	-1.96%	-4.49%	-0.43%	-2.63%
t=-9	-2.59%	2.40%	5.22%	-7.81%	-10.43%
t=-8	4.26%	0.46%	0.90%	3.35%	-7.08%
t=-7	-5.10%	-0.67%	-1.62%	-3.49%	-10.57%
t=-6	12.90%	-1.05%	-2.46%	15.37%	4.80%
t=-5	4.76%	0.46%	0.90%	3.86%	8.66%
t=-4	-3.64%	-0.80%	-1.90%	-1.74%	6.92%
t=-3	2.36%	0.05%	-0.03%	2.39%	9.31%
t=-2	11.52%	-0.59%	-1.44%	12.96%	22.27%
t=-1	7.44%	-0.78%	-1.87%	9.31%	31.57%
t=0	0.00%	-1.20%	-2.80%	2.80%	34.38%
t=1	0.00%	3.59%	7.86%	-7.86%	26.51%
t=2	3.85%	1.05%	2.20%	1.65%	28.16%
t=3	-4.81%	-0.73%	-1.75%	-3.07%	25.10%
t=4	-8.56%	-0.37%	-0.95%	-7.61%	17.49%
t=5	-14.89%	0.03%	-0.07%	-14.82%	2.67%
t=6	0.00%	-1.79%	-4.11%	4.11%	6.78%
t=7	-2.00%	-0.74%	-1.78%	-0.22%	6.56%
t=8	0.51%	-1.16%	-2.72%	3.23%	9.78%
t=9	5.58%	-0.12%	-0.40%	5.98%	15.76%
t=10	-0.96%	-0.83%	-1.96%	1.00%	16.77%
t=11	-13.59%	-1.00%	-2.35%	-11.25%	5.52%
t=12	11.24%	2.69%	5.86%	5.38%	10.90%
t=13	-4.04%	-0.18%	-0.54%	-3.50%	7.39%
t=14	-2.63%	-2.48%	-5.65%	3.02%	10.41%
t=15	7.03%	0.44%	0.85%	6.17%	16.59%

To better illustrate the trends of AR and CAR, the data for both are plotted as line charts, as shown in the following figure 2.

In the period before the event date (t=-15 to t=-1), AR and CAR exhibited significant fluctuations. On t=-6 (August 16), AR reached as high as +15.37%, and CAR turned positive, rising to +4.80%. On t=-2 (August 22), AR surged again to +12.96%, with CAR reaching 22.27%. By t=-1, CAR peaked at 31.57% during the entire window period. This trend was closely related to the policy on August 16, when China Bond Credit Enhancement Co., Ltd. provided full guarantees for private real estate enterprises. Market concerns over CIFI Group's liquidity were temporarily alleviated due to policy support, while there was already sufficient expectation for the extension announcement the following day.

On the event date (t=0), AR stood at +2.80%, and CAR edged up slightly to 34.38%. The market reaction was extremely mild—neither a sharp rise (as the good news had been fully priced in) nor a sharp drop (panic selling). The

reason lies in the full digestion of expectations: following the earlier policy support and stock price increase, the market was already prepared for the extension; the cash preservation strategy was recognized by institutions, with analysts such as Citibank noting that under volatile US dollar bond market conditions, issuing $300 million in new refinancing "would be very difficult and at a higher cost," making the choice to preserve cash reasonable.

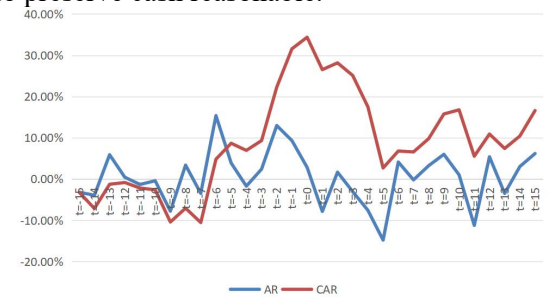

Figure 2. Trend Chart of Abnormal Return and Cumulative Abnormal Return of CIFI Group

In the period after the event date (t=1 to t=15), AR and CAR began to decline continuously. On t=4, AR fell to -14.82%, and CAR quickly retreated to 2.67%, almost completely erasing the previous gains. On t=11, AR stood at -11.25%, with CAR remaining at only 5.52%. This trend reflects that short-term positives had been fully priced in, as both the policy support and the completion of the extension were completely digested, and concerns over fundamentals resurfaced—CIFI Group's cumulative sales from January to July 2022 fell by more than 50% year-on-year, and the high interest cost of 11.581% after the extension would erode future profits; while the real estate sector as a whole faced pressure, with the stock market weakening in late August 2022.

In summary, H1 is not supported (no significant negative reaction occurred on the day of the extension announcement), but H3 is supported (prior policy measures and expectation management significantly moderated the market reaction).

4.2 Long-term Market Reaction Analysis

This paper uses the buy-and-hold abnormal return (BHAR) to measure the long-term market reaction. The event window is selected from the event date, August 24, 2022, to December 31, 2025, i.e., [0, 700], comprising a total of 701 trading days. The buy-and-hold abnormal return (BHAR) measures the cumulative abnormal return an investor earns by holding a stock over a longer period and is an effective indicator for evaluating long-term market reactions.

The calculation formula for BHAR is:

$$BHAR_{it} = \prod_{t=1}^{T}(1+R_{it}) - \prod_{t=1}^{T}(1+R_{mt}) \quad (5)$$

Where:

BHARit denotes the buy-and-hold abnormal return;

Rit denotes the individual stock return of CIFI Group on day t;

Rmt denotes the market return of the Hang Seng Index on day t.

A positive BHAR indicates that holding CIFI Group's stock outperformed the market, while a negative BHAR indicates underperformance relative to the market.

This section selects the event date, August 24, 2022, to December 31, 2025, as the event window, i.e., [0,700]. After excluding suspension days and non-trading days, this yields a total of 701 trading days.

Based on the above formula and the specific values exported from Choice Financial Terminal, the BHAR values for the 701 trading days (approximately a 40-month period) following CIFI Group's extension are calculated. Due to space constraints, the table 2 below presents only the event date and the data for the last trading day of each valid month, as follows.

The above table 2 presents the BHAR calculated based on daily returns derived from the closing prices of CIFI Group and the Hang Seng Index during the period from August 24, 2022, to December 31, 2025. The table 2 displays data for the event date and the last trading day of each valid month. Meanwhile, the figure 3 below shows a trend line chart of all BHAR data for the period [0, 700]. Additionally, to ensure calculation accuracy, this paper also computed monthly BHAR data based on monthly closing prices, which are also presented in the figure 3 below.

Table 2. BHAR of CIFI Group during the Event Window [0, 700]

Period	BHAR	Period	BHAR	Period	BHAR
2022-08-24	0.00%	2024-01-31	-88.99%	2025-02-28	-132.50%
2022-08-31	-26.64%	2024-02-29	-91.60%	2025-03-31	-134.77%
2022-09-30	-58.61%	2024-03-27	-92.20%	2025-04-30	-129.34%

2022-10-26	-59.49%	2024-04-30	-96.94%	2025-05-30	-135.83%
2022-11-30	-55.27%	2024-05-31	-97.37%	2025-06-30	-140.52%
2022-12-30	-64.76%	2024-06-28	-98.39%	2025-07-31	-144.31%
2023-01-31	-73.61%	2024-07-31	-96.83%	2025-08-29	-147.79%
2023-02-28	-74.79%	2024-08-30	-102.00%	2025-09-30	-158.11%
2023-03-30	-80.69%	2024-09-30	-114.69%	2025-10-31	-152.96%
2023-09-29	-100.35%	2024-10-31	-111.72%	2025-11-28	-153.89%
2023-10-31	-100.27%	2024-11-29	-108.45%	2025-12-31	-153.66%
2023-11-30	-95.33%	2024-12-31	-114.15%		
2023-12-29	-97.48%	2025-01-28	-116.14%		

Source: Calculated based on transaction data from Tonghuashun (Flush) Financial Terminal

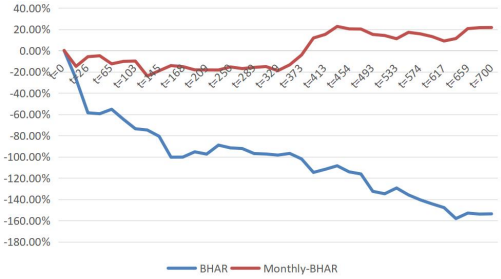

Figure 3. BHAR of CIFI Group during the Event Window [0, 700]

As shown in Figure 3, throughout the entire observation period of approximately 40 months (701 trading days), the BHAR of CIFI Group remained negative and exhibited an overall one-way downward trend, falling from 0.00% on the event date to -153.66% by the end of 2025. This means that if an investor bought CIFI Group's stock when the perpetual bond extension news was confirmed and held it for the long term, the investor would have underperformed the Hang Seng Index by more than 153 percentage points over the same period.

From the perspective of phased characteristics, the BHAR trend can be divided into three stages. The first stage was a rapid decline period (August 2022 to April 2023), during which BHAR plummeted from 0% to -100.35% in about eight months, reflecting panic selling in the market in response to the perpetual bond extension event and extreme concerns over the company's liquidity. The second stage was a low-level consolidation period (May 2023 to July 2024), during which BHAR hovered between -95% and -100%, neither continuing to fall sharply nor rebounding significantly, as the market adopted a wait-and-see attitude pending progress in debt restructuring or clarity on industry policies. The third stage was a second bottoming-out period (August 2024 to December 2025), during which BHAR declined sharply again, ultimately reaching a historic low of -153.66%.

From the perspective of event spillover effects, multiple significant negative events involving CIFI Group during the window period formed clear acceleration points in the BHAR trend: on November 1, 2022, the company announced the suspension of principal and interest payments on its offshore debts, causing its stock price to plunge 25% that day; in September and October 2022, S&P, Fitch, and Moody's successively downgraded its credit ratings; in October 2022, a trust plan was declared overdue; in early 2023, progress on offshore debt restructuring was slow; and from 2024 to 2025, sales collections fell short of expectations, and debt resolution solutions repeatedly failed to materialize. The cumulative impact of these events formed an additive effect that drove the sustained decline.

From the perspective of the policy environment, although local governments introduced a series of real estate regulation policies from 2022 to 2025, the policy warmth failed to reach CIFI Group, which was already in distress, and the BHAR curve showed no significant rebound.

In summary, H2 is supported (the long-term market reaction following the perpetual bond extension remains persistently negative).

5. Research Conclusions and Implications

5.1 Research Conclusions

This paper takes the US$300 million perpetual bond extension of CIFI Group as the research object and uses the event study method to analyze the short-term and long-term market reactions, drawing the following main conclusions:

First, the short-term market reaction to the perpetual bond extension announcement was significantly moderated by prior policy measures and expectation management. Driven by policy support, the market had already priced in the extension expectation in advance, resulting in a

positive abnormal return on the announcement day and a mild reaction. This suggests that proactive communication and signal release by companies can, to some extent, mitigate the negative impact of an extension event.

Second, the long-term market reaction to the perpetual bond extension exhibited devastating characteristics. In the 40 months following the extension, BHAR remained consistently negative, eventually falling to -153.66%, with no trend of recovery. The market interpreted the perpetual bond extension not merely as a one-time liquidity crisis but as a signal of fundamental deterioration in the company's fundamentals.

Third, the cumulative effect of negative events was the primary driver of the deteriorating long-term market reaction. Events such as rating downgrades, debt defaults, and slow restructuring progress formed a series of sustained shocks, while policy support failed to reach the distressed company, leading to a complete loss of investor confidence.

5.2 Practical Implications

For enterprises, decisions regarding perpetual bond extensions must be made with extreme caution. Even if the extension is a contractual right, in a context of credit deterioration, exercising it will send a strong negative signal to the market and trigger a chain reaction. Companies should communicate with the market in advance and release signals to avoid panic caused by "surprise extensions." At the same time, after an extension, they need to accelerate operational recovery and debt restructuring to restore investor confidence.

For investors, it is essential to look beyond the "equity appearance" of perpetual bonds and return to analyzing corporate fundamentals and cash flow. For "forced extension" perpetual bonds, they should be regarded as early warning signals of risk, prompting timely adjustments to risk exposure. The sustained deterioration in long-term market reactions indicates that the negative impact of an extension event will not automatically disappear over time.

For regulators, information disclosure requirements for perpetual bond extensions should be strengthened. Issuers should be required to disclose their extension intentions and decision-making considerations in advance to protect investors' right to know. Additionally, investor protection mechanisms should be improved, including clear criteria for determining default on perpetual bonds and procedures for handling such defaults.

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As this thesis draws to a close, my heart is filled with gratitude. I would like to express my sincere appreciation to my supervisor, Associate Professor Qianlong Yu, for his meticulous guidance from topic selection to finalization.

With keen insight, you pinpointed the academic value of the niche area of "perpetual bond extension," which solidified my confidence in this research. When my case analysis reached an impasse, you guided me to adopt the perspective of "forced extension," which opened up a clear path forward for the thesis. You often emphasized that "doing research requires the ability to embrace solitude and persistence," a lesson in quiet dedication and steadfastness that will remain my most cherished asset on my future academic journey.

The completion of this thesis marks a new beginning. May I always uphold a spirit of reverence and passion for knowledge, keeping my feet on the ground while reaching for the stars.

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