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Research on the Impact of Financial Market Fluctuations on Private Equity Investment Returns

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Abstract: Increased volatility in financial markets has led to volatile returns on private equity investments, especially against a backdrop of uncertainty about the timing of investment exits and rising financing difficulties. In addition, market volatility complicates investment decisions and risk assessment. To avoid these problems, this paper proposes that private equity investors can diversify risks through industry and geographic diversification, flexibly adjust portfolios and exit strategies, and rely on real-time monitoring of market sentiment to optimize investment decisions. These strategies help investors improve their returns and risk management ability in an unstable market environment.

Keywords: financial market; private equity; investment income

1. Introduction

1.1. Definition and Measurement of Financial Market Volatility

Financial market volatility usually refers to the volatility of financial asset prices, which is a reflection of market uncertainty and risk. It reflects the extent to which prices or returns in financial markets have moved and how they have changed over time. The existence of volatility indicates that participants in the market have divergent expectations about the future economy, policies or other external factors, so volatility is an important indicator to measure market instability and risk. Volatility can be measured in a number of ways, the most common of which is by calculating the standard deviation or variance of an asset's return. Specifically, the measurement of volatility is usually based on the following formula:

$$\sigma = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (r_i - \bar{r})^2} \quad (1)$$

Among them, r_i representational i period of return, $\bar{r}$ is the average of the returns over all periods, n is the number of sample data. The square of the volatility is called the variance, and the formula is:

$$\text{Var}(r) = \frac{1}{n-1} \sum_{i=1}^n (r_i - \bar{r})^2 \quad (2)$$

The unit of variance is the square of the rate of return, so it is often used to measure the strength of changes in asset prices, especially when they are volatile over a short period of time. In addition to standard deviation and variance, other methods such as generalized autoregressive conditional heteroscedasticity models are also commonly used to

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estimate the volatility of financial markets [1]. Generalized autoregressive conditional heteroscedasticity models capture and predict the volatility of time series data in a dynamic manner, especially in the case of volatile market fluctuations [2].

1.2. Influencing Factors of Financial Market Volatility

Financial market volatility is influenced by a variety of factors, including macroeconomic environment, market liquidity, investor behavior, policy regulation and international market transmission effects. The macroeconomic environment is crucial to the market pricing mechanism, and key variables such as inflation, interest rate changes, and economic growth rate affect asset valuations and further trigger market price fluctuations. The level of market liquidity determines the smoothness of asset trading, and liquidity tightening may lead to sharp fluctuations in asset prices and even lead to systemic risks in the market. Investor behavior is also an important factor in market volatility, and herding and emotion-driven trading strategies will amplify market volatility [3,4]. Policy regulation directly affects market stability, and the adjustment of monetary policy, fiscal policy and regulatory policy may cause short-term market shocks. International market transmission effects affect domestic markets through capital flows, trade links, and foreign exchange market fluctuations, making them more sensitive to global macroeconomic changes.

2. Analysis of the Impact of Financial Market Fluctuations on Private Equity Investment Returns

2.1. Increased Volatility of Returns

When market volatility rises, the uncertainty of asset pricing increases, leading to an increase in risk premiums, which in turn affects the investment decisions and asset allocation of private equity funds. Higher risk premiums mean investors demand higher returns, which makes it more expensive for companies to raise capital, potentially discouraging private equity funds from investing in new projects. In addition, increased market volatility may cause asset prices to be undervalued or overvalued, making the fund face greater uncertainty in valuation, affecting the book value of the asset and investor confidence [5]. For example, in November 2020, a leading Chinese real estate firm faced overdue commercial bills, which triggered a series of financial difficulties, and then its financial situation continued to deteriorate, leading to the breakdown of the supplier's capital chain and the closure or bankruptcy of some small and medium-sized enterprises. This series of events caused the market to worry about the real estate industry, resulting in the share price of related companies fell [6]. For private equity funds that invest in Evergrande or related real estate companies, increased market volatility directly affects investment returns and may even lead to asset impairment [7].

2.2. Uncertainty of Investment Exit Timing

In the market boom cycle, the valuation of enterprises is higher, the exit methods such as initial public offerings, mergers and acquisitions and secondary market transfers are more attractive, and investors can realize capital return at a higher price. However, in periods of downturn or severe volatility, liquidity is tightened, investors' risk appetite is reduced, and the valuation of enterprises may be suppressed, making it difficult for private equity funds to choose the right exit time, and even have to extend the holding period, affecting the return on investment [8]. In addition, market volatility affects not only asset prices, but also investor sentiment and the regulatory environment, and greater market uncertainty can lead to tighter regulation, resulting in longer IPO review cycles, or more stringent M&A approvals, further increasing exit uncertainty. In different market environments, there are significant differences in the exit methods used by private equity funds and their returns (see Figure 1).

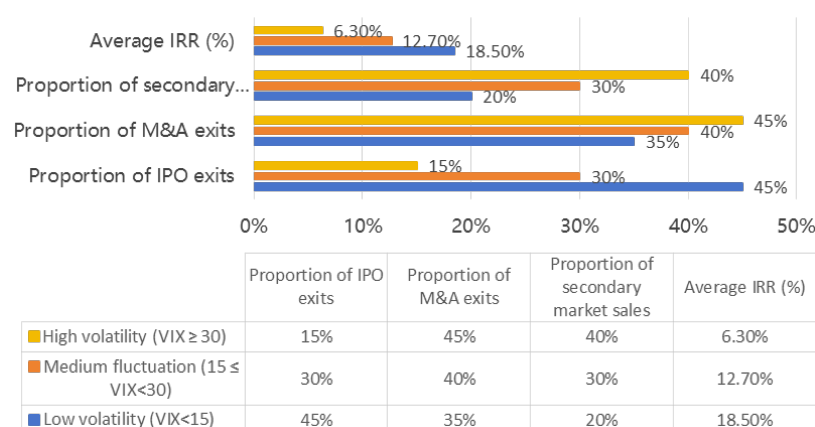


Figure 1. The Impact of Financial Market Volatility on the Exit Mode of Private Equity Investments.

The data show that when market volatility is low, IPO exit accounts for the highest proportion, and the average IRR is relatively high. However, in a highly volatile market, the proportion of IPO exits decreased significantly, more investors chose mergers and acquisitions or secondary market sales, and the overall yield also showed a downward trend. For private equity funds, scientific market analysis, reasonable investment term setting, and flexible exit strategies (such as diversified exit channels and preset hedging strategies) become the key to cope with market volatility.

2.3. Increased Difficulty in Capital Raising and Financing

In response to increased market uncertainty and reduced investor risk appetite, institutional and high net worth investors are more inclined to allocate to low-risk assets, such as government bonds or gold, and reduce their allocation to private equity funds. This has also led to the extension of the fundraising cycle of private equity funds, and even a decline in the size of financing. In addition, the tight market liquidity limits the capital allocation ability of institutional investors such as banks and insurance companies, which further limits the source of funds for private equity funds. At the same time, financial market fluctuations are usually accompanied by changes in the level of interest rates. When the market interest rate rises, the financing cost of private equity funds will increase, and the leveraged buyout model will face higher debt financing costs, thus reducing the return on investment. Under such circumstances, fund managers have had to adjust their investment strategies to reduce highly leveraged trading and shift to a more stable investment model. But in a downturn, even as interest rates fall, investors' lack of confidence can dampen inflows, making it difficult for private equity funds to raise money [9].

2.4. Increased Complexity in Investment Decision-Making and Risk Assessment

Market volatility can affect the valuation benchmarks of companies, making it difficult for investors to accurately judge the true value of assets. In a highly volatile environment, traditional valuation models (such as discounted cash flow model, market multiple method, etc.) may lose stability and increase valuation uncertainty. In addition, changes in market sentiment can also amplify short-term deviations in asset prices, further increasing the difficulty of investment judgment. In terms of risk assessment, market uncertainty increases the management challenge of default risk and liquidity risk. Investors need to assess the financial health of companies more finely, focusing on leverage levels, cash flow stability and the resilience of the sector. At the same time, higher volatility can affect exit strategies, especially the open nature of the IPO and M&A markets, making investment cycles and returns more uncertain [10]. Table 1 below shows the specific impact of financial market volatility on different aspects of private equity investment, and describes the

specific performance of these factors under the environment of market volatility and their eventual impact on investment decisions.

Table 1. Influences of Financial Market Fluctuations on Private Equity Investment Decisions.

Influencing factor	Concrete performance	Influence the result
Asset valuation uncertainty	Market prices deviate from intrinsic values	Investment judgment becomes more difficult
Increased liquidity risk	The exit market is restricted, and the IPO and M & A window is closed	The investment cycle is prolonged, and the volatility of income is intensified
Leverage and default risk	The risk of highly indebted enterprises is increasing, and the financing cost is rising	Defaults are rising and investment returns are suffering
Sentiment effect	Capital flows have fluctuated sharply and investor confidence has fluctuated	Capital mobility is reduced and market pricing is ineffective

Financial market volatility has increased the difficulty of private equity investment decisions, not only affecting asset valuation and liquidity risk, but also increasing the uncertainty of leverage and default risk [11]. The volatility of market sentiment further interferes with investment judgment, making the instability of income expectations rise significantly.

3. Private Equity Investment Strategies under Financial Market Fluctuations

3.1. Risk Diversification through Industry and Geographical Diversification

Industry diversification reduces the impact of industry-specific risks on the overall portfolio. Different industries have different economic cycles and market demand characteristics, and some industries may perform well in a certain economic environment, while others may suffer from greater pressure. For example, the technology sector typically has high growth potential when the market is rising, but can suffer a larger correction during a recession [12]. Traditional sectors such as consumer goods, healthcare and utilities are likely to provide steadier returns in a downturn. By diversifying investments across multiple industries, private equity investors can reduce the impact of fluctuations in a single industry on overall portfolio returns. Regional diversification is the avoidance of regional economic risks by investing in different regions or countries. The volatility of the financial market often has regional characteristics, and the macroeconomic environment, policy changes and volatility of the financial market are different in different countries or regions. For example, some emerging market stock markets may be more affected by international capital flows or exchange rate fluctuations, while mature markets may show greater resilience due to more stable economic policies [13]. Table 2 below shows the risk diversification effects of industry and geographic diversification strategies.

Table 2. Industry and Geographical Diversification Risk Dispersion.

Investment strategy	Major advantage	Risk control mode	Give an example
Industry diversification	Reduce systemic risk in a single industry	Select targets in different industries for investment	Investing in technology, healthcare, consumer goods
Regional diversification	Control the risk of regional economic fluctuations	Diversify investments into projects in different countries or regions	Investment in Europe, America, Asia and other regions

By diversifying their investments globally, private equity investors can take advantage of different market opportunities across regions and mitigate the risk of financial volatility in a single region. Therefore, industry and geographical diversification not only helps to spread investment risk, but also provides more income opportunities for private equity investors, especially in times of financial market volatility.

3.2. Make Use of Market Fluctuations to Adjust the Portfolio Structure Flexibly

In response to the challenges and opportunities of different market situations, private equity investment needs to flexibly adjust the structure of the portfolio according to market changes, and investors can reduce risks by diversifying their investments when there is a large market fluctuation. By allocating capital across sectors and geographies, investors are able to mitigate the negative impact of fluctuations in one sector or region on the overall portfolio, a strategy that helps stabilize returns when market uncertainty increases. In addition, private equity funds can adjust the liquidity of their assets in response to market fluctuations, such as low market confidence, and private equity investors can choose to increase their holdings in relatively solid, cyclically-resistant companies, which typically perform better during economic downturns. On the contrary, when confidence recovers, investors can increase investment in enterprises with strong growth and high growth stage. In practice, when the stock market fluctuates, some private equity funds may turn to mergers and acquisitions of mature enterprises with stable cash flow performance and reduce high-risk investments, while when the market picks up, they are more inclined to invest in entrepreneurial companies with greater growth potential, expecting to obtain higher capital appreciation. This strategy of flexible adjustment of portfolio structure can not only maximize the opportunities brought by market fluctuations, but also effectively control investment risks.

3.3. Flexibly Adjust Exit Timing and Method According to Market Conditions

The volatility of the market often affects the valuation and liquidity of investment projects, which requires private equity investors to dynamically adjust the timing and manner of exit based on market conditions. The choice of exit time directly affects the investment return. During periods of high market volatility, investors may face lower market valuations, resulting in expected gains not being realized. At this point, delaying the exit and waiting for the market to stabilize may improve investment returns. However, if there is a sustained downward trend in the market, waiting too much may miss the best exit time and even lead to losses [14]. Therefore, private equity investors should have the flexibility to adjust their exit plans according to market trends, industry cycles, and the stage of project development. In terms of exit methods, in addition to traditional public market exits (such as ipos and mergers and acquisitions), exit can also be considered through secondary market transactions or private transactions with other institutional investors. Especially in times of market turbulence, more stable valuations and exit returns can sometimes be obtained through mergers and acquisitions and the introduction of strategic investors (see Figure 2).

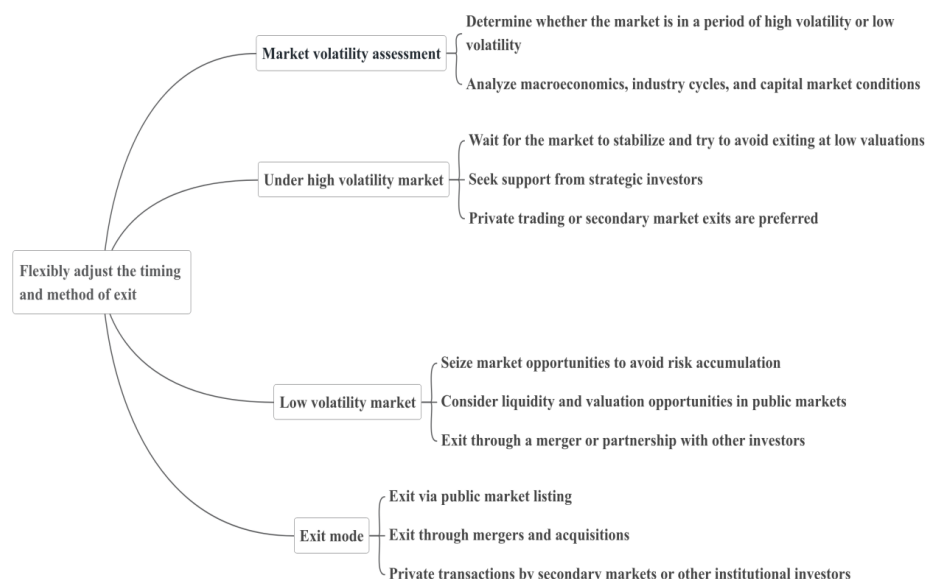


Figure 2. Flexibly Adjust the Timing and Method of Exit.

In summary, against the backdrop of financial market volatility, private equity investors must be flexible and adjust their exit strategies to maximize returns. Private equity investors should always pay attention to market dynamics, and flexibly adjust the exit time and method according to the characteristics of market fluctuations to maximize investment returns. Through in-depth market evaluation and strategy adjustment, investors can not only seek timely exits in high-volatility markets, but also seize the best opportunities in low-volatility markets, ensuring a balance between risk and return.

3.4. Adjust Investment Decisions with Real-Time Monitoring of Market Sentiment

Real-time monitoring of market sentiment has become an important tool for adjusting investment decisions, which can help investors respond more flexibly to market volatility. By analyzing changes in market sentiment, investors can identify overreactions or unreasonable risk pricing in the market, thus providing a valuable reference basis for investment decisions. Especially in the face of sudden market fluctuations, timely understanding of investor sentiment, consumer confidence and the behavior pattern of market participants can help to evaluate the risks of equity investment and make timely adjustments [15]. Specifically, real-time monitoring of market sentiment can not only help investors perceive short-term trends in the market, but also provide signals of psychological expectations for long-term investment decisions. Sentiment swings can often reflect the market's emotional reaction to a particular sector or asset, and overly optimistic or pessimistic sentiment can cause prices to deviate from fundamentals. When market sentiment is overly optimistic, investors may face the risk that assets are overvalued; When the market is pessimistic, it is possible to miss investment opportunities that underestimate assets. Therefore, combined with the analysis of market sentiment, private equity investors can adjust the investment pace and optimize capital allocation according to the changes in sentiment, so as to improve the stability and return potential of the investment portfolio.

In addition, technical means of sentiment monitoring, such as social media analysis, news sentiment scoring, etc., also provide investors with more accurate market perception tools. Sentiment monitoring technology is a tool to predict market movements and optimize investment decisions by analyzing and understanding the emotions, moods and psychological states of market participants. In finance, sentiment monitoring is often applied to real-time analysis of social media, news, analytical reports, comments and other data sources. These technologies automatically identify and analyze the emotions expressed in the text through natural language processing (NLP), sentiment analysis, machine learning

and big data processing, so as to help investors judge the emotional tendency of the market.

4. Conclusion

Through the in-depth study of the relationship between financial market volatility and private equity investment returns, this paper reveals the multi-faceted impact of financial market volatility on private equity investment. Volatility not only increases the volatility of returns, but also makes investment exit timing and capital raising more uncertain. At the same time, volatility increases the complexity of investment decisions, requiring investors to be more flexible and prudent in risk assessment and strategy adjustment. In this context, private equity investors should effectively cope with market fluctuations by diversifying strategies, flexibly adjusting portfolio structure, optimizing exit timing and other means, so as to ensure the stability and sustainability of investment returns.

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