

Original Research Article**Total return swap and the archegos collapse: Lessons from a spectacular failure***Yunzhi Lin**Australian National University, Canberra, ACT2601, Australia*

Abstract: This study investigates the reason for the failure of Bill Hwang. We analyzed the application of total return swap(TRS) in this event and its two advantages: good concealment and ability for high leverage. We concluded that the failure of Bill Hwang is due to over-leveraged position by using TRS. This article also gives some advice on the regulatory of TRS.

Keywords: TRS; Archegos; Bill hwang

1. Introduction

In late March 2021, one of the most spectacular failures happened in the financial market. Bill Hwang, a Wall Street investor, lost US\$20 billion in two days (Rawson 2021), which also caused enormous losses to six leading investment banks. This event not only led to significant financial losses but also raised concerns about the stability and transparency of the financial markets, prompting regulatory scrutiny and calling for better risk management practices. As a result, Bill Hwang has been charged with 11 crimes. Behind the failure of Bill Hwang is Total Return Swap (TRS), a derivative he used in the investment during that period.

In this article, our goal is to analyze how and why Archegos would lose 20 billion in such a short time period. Bill Hwang started his “family office”, Archegos Capital Management, after admitted illegally using inside information and was heavily penalized in 2012. During the period from 2013 to 2021, the fund managed by Archegos amazingly increased from US\$200 million to US\$20 billion using TRS. However, in March 2021, the stock price of Viacom dramatically dropped after the announcement of issuing new shares on March 22, and it is one of the companies that Archegos held a large position. Archegos failed to meet the margin call, which heavily affected the market, its prime brokers, and also the stock price of the companies where Archegos held a large position. (Schatzker et al. 2022)

The derivative Archegos used in investment is the TRS. Moorad Choudhry (2004) provides a foundational understanding of the structure of TRS. In a TRS, one party (the total return receiver) pays a fixed or floating rate to the counterparty (the total return payer) and receives the total return of the underlying asset, which includes both income and capital gains. The underlying asset is usually a stock, a bond, or an equity index. Essentially, it is a derivative that helps to exchange the payment of an agreed rate and asset return.

TRS has wide applications in the financial market. Choudhry (2004) also highlights a controversial aspect of TRS. It can be used to conceal equity stakes in public companies. In both UK and USA, regulators have merged to limit the use of TRS to improve the corporate governance and market transparency, as investors can hold large position of an equity without being known by the public easily by holding the position in TRS.(Siebens and Gambil 2009) For example, regulatory actions in both the UK and the US have aimed to restrict the use of TRS to prevent market manipulation and enhance transparency.

In addition, there are also some researches related to TRS. Colin Lizieri et al. (2012) delve into the inefficiencies in the real estate market with the usage of TRS. They mentioned that an efficient market should guarantee the existence of zero spread of TRS, and the non-zero value from both directions in real estate market

is the result of non-rational behavior by inexperienced market players. Zhuang(2010) used HJM interest rate model to quantify interest rate risk and gave the price of TRS without default risk. Zhuang(2010) also modeled the default risk and obtained the numerical solution of pricing problem with Monte Carlo method.

2. How archegos used TRS

Archegos held this position in the TRS. Just take the stock for example, Archegos pays an agreed rate and receives the income, such as dividends, of the stock. This strategy allowed Archegos to gain exposure to the underlying assets without directly owning them, thereby leveraging its capital and magnifying returns and losses. Meanwhile, if the stock price goes up, Archegos can receive the capital gain, and on the contrary, Archegos has to pay the capital loss if the stock price declines. The other party receives the agreed rate of payment and pays the total return of the underlying asset. (Downey 2024) In this event, Archegos' prime brokers, mainly those leading investment banks such as Goldman Sachs, held this position. In addition to the TRS contract, in order to hedge the risk of price movement of underlying assets, these investment banks will buy the same amount of underlying assets.

3. Advantages of TRS

Under such a strategy, regardless of the price change of underlying assets, investment banks can always pay the total return by the return on the underlying assets, and receive payments at an agreed rate with no market risk. Besides, the total return receiver must pay the margin to ensure the ability to pay when there is a capital loss, and the total return payer can sell the underlying asset if the price falls dramatically and the other party fails to pay for the margin call. TRS contract is an exchange between set rate payments (either fixed or floating) and total return payments of an underlying asset, combining both market risk and credit risk and there are several benefits for investors using TRS contract.

Firstly, the total return receiver can gain exposure and benefit from the underlying asset without actually owning it. Since payer buys the asset for receiver, payer is the actual owner of the asset. Receivers could stay anonymous and hold the position in underlying assets, and the market has no information about it. It suggests that TRS contract has good concealment. For Bill Hwang, he used TRS to obtain a position in stock while prime brokers held the stock in the market.

Secondly, the receiver's position could be highly leveraged. For example, if the underlying asset is valued at US\$500 million, the margin might only be US\$100 million. It means that a receiver with assets of US\$100 million can hold a position worth US\$500 million, which significantly increases the income if the asset price goes up. However, it is also a disadvantage if the asset price goes down since there is a larger capital loss. As for the payers, they can earn the payment at the agreed rate regardless of how price changes. In reality, receivers are usually hedge funds, and payers are usually investment banks. In the investment of Archegos Capital Management, Bill Hwang signed TRS contract on several stocks with six leading investment banks, including Goldman Sachs, Morgan Stanley, Nomura, Credit Suisse, Deutsche Bank, and UBS. Hwang chose the stocks based on his analysis and then signed TRS contract with investment banks. Archegos received total return on those stocks and paid set rate to investment banks. Archegos' position was then highly leveraged through TRS.

4. Reasons for failure

It seems that TRS was quite advantageous for Bill Hwang and Archegos, but the problem is that the position of Archegos was over-leveraged, and the loss would be extremely large if Bill chose the wrong stock, which means the price declined. This over-leverage amplified the losses when the stock prices of companies like Viacom dropped sharply, leading to a cascade of margin calls and forced liquidations. At first, Archegos

did choose many good stocks and increased rapidly at the highly leveraged position, and the fund managed by Archegos increased dramatically. In the meantime, those investment banks received a large amount of payment from Archegos. It seems like a win-win situation for both Archegos and investment banks. At this time, they didn't know that Hwang signed the contract with six investment banks at the same time, and Archegos hence held a large position in some companies' stock by TRS. Since the actual owners of the stocks were six different investment banks, it was not noticed by any other market participants that Archegos held that position. This lack of transparency accelerated the sudden and dramatic market movements when the true extent of Archegos' positions became known. In March 2021, the stock price of Viacom, one of the companies that Archegos held a large position, dropped sharply. Due to the contract, Archegos failed to pay for the margin call, those investment banks decided to sell underlying stocks in TRS contract with Archegos. At this time, those leading investment banks found that Archegos had a TRS contract with six investment banks. As a result, six investment banks tried to sell all the stocks in the TRS contract with Archegos in a short time period to reduce their loss, and hence the price of those stocks further decreased, which flooded the market and Hwang lost US\$20 billion in two days.

5. Conclusion

Total return swap, a type of financial derivative, helped Archegos with its fast growth and also caused its failure. The scale of loss and influence makes this event significant for the financial derivatives market. Compared to other events in the financial market, no one has lost so much money in such a short period with no signals. Before this event happened, Bill Hwang was even not famous in the financial market. Also, TRS is a derivative combining both market risk and credit risk, which is more complicated and interesting than other derivatives. In this event, apparently, Bill Hwang and his Archegos Capital Management suffered losses. The trend of the stock price of Viacom did not follow expectations and Archegos was not able to pay for the margin call with its assets. Liquidation is one of the only choices. Investment banks also suffered losses in this event. After Archegos failed to meet the margin call, a huge number of stocks were sold in the market, which caused a further price decline. It means that the money they got from selling the stocks could not cover their initial cost, which is a kind of loss. In the market, those investors, either individuals or funds, who bought those stocks at a low price gained from this event. The price of stocks Archegos held a position in dropped during the event, and then steadily recovered from the event. Hence those who bought the stocks at a low price can gain from this event. Besides, if there is a derivative concerning those stocks, such as future, forward, or option, those who held a short position in the future, forward, or option could gain from this event since the stock price declined. Hwang and Archegos are actually speculators, essentially, they bet on the price movement of the underlying asset. Those investment banks are hedgers, they use TRS and underlying assets to earn a set rate of payment with no market risk. As for the other investors who bought the stocks or derivatives on those stocks, there is not enough information to judge whether they are hedgers, speculators, or arbitragers, they might enter the market for different reasons.

Looking back on this event, there are several things we can learn from it. Firstly, Hwang's failure teaches us that holding a highly leveraged position in investment is a double-edged sword. Investors and financial institutions should carefully assess the risks associated with high leverage and implement robust risk management strategies to mitigate potential losses. It can provide you with a higher return, but you have to take a higher risk. The investment strategies will be more conservative and careful when using high-leveraged positions or instead use a lower-leveraged position. Besides, the risk management of investment banks should be enhanced. Basically, the losses of investment banks are caused by credit risk, although investment banks perfectly hedged the market risk. Unlike common future and forward contracts, such a huge amount of stocks is almost impossible to be sold in a short time period, and selling a huge amount of stocks will probably cause a sharp price decline,

which suggests a high credit risk of TRS contracts. They should pay attention to credit risk, such as raising the level of margin. Moreover, the government or related departments should regularize the trade of TRS. Regulators should consider setting stricter margin requirements and enhancing transparency rules to prevent similar incidents in the future. Since that receiver could gain exposure to the underlying asset anonymously without actually owning it and invest in a high-leveraged position using TRS, the trade should be regularized and control the high-leveraged trade. For example, setting a reasonable margin rate can control the level of leverage. In this event, a low level of margin makes Archegos able to hold a high-leveraged position. At last, the market could be more transparent on TRS trade to avoid this kind of event happening.

About the author

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