

Research on the Characteristics and Risks of KODA

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Abstract This paper dissects the structured financial derivative product Knock Out Discount Accumulator (KODA) by introducing its characteristics, analyzing its potential risks and providing strategies of protective measures for both banks and investors. KODA is a non-standard financial product sold to investors at a discounted price in the curb exchange. The investor, frequently bearing a leverage effect, has the obligation to accumulate the share purchase until the share reaches knock out price or the contract expires. A single KODA contract brings potential risks for both parties. Yet there are several risk prevention strategies available for either party, banks usually have access to safer and wider range of risk control methods than the investors.

Key words Financial derivative; KODA; Accumulator; Leverage; Hedging

1 Introduction

After the down season of Hong Kong stock market in the second half of 2008, several pieces of news spread around telling stories about individuals' wealth being wiped out by this financial product^[1]. One telling example is that an old lady claimed a loss of more than HKD 200 million under the accumulator and sued United Bank of Switzerland for misleading her into those contracts^①. While in the late 2009, it seems that the accumulator has returned along with the recovery of the economy. Customers of KODA contracts are likely to be more careful, but still not fully aware of the risks and how the product works^[2]. Kapasi argues that unlike in the gambling, the players in this creative derivative product do not know that they are the disadvantaged and that the bank has the superiority. Moreover, he suggests that there are other safer financial products to invest and those would probably assure more profits^②.

The Knock Out Discount Accumulator (KODA), also called the Accumulator, was first linked with shares in 2002 and began prevail in Hong Kong in 2006. It was originally designed for corporate clients in Europe to build equity position in other companies, but became popular among individual investors in Asia several years ago^[2]. This paper seeks to explore the characteristics of the accumulator and reveal the risks under the contracts both for banks and for investors. In addition, for each party there are selective protective measures advised.

2 Characteristics of KODA

Knock Out Discount Accumulator, which can be regarded as a one-year option, is more of a complex structured financial derivative product. It can be linked with foreign exchange rate, shares, gold, oil futures and the like. However, share forward accumulators, usually quoted as discounted shares by issuers, are more prevalent among investors. They allow investors to purchase a certain amount of shares at the strike price when the price stays within a range between the strike price and the knock out price. They also make them to accumulate double amount of contracted shares at the strike price when current price falls below the strike price. In addition, the contract will be expired if the stock price rises beyond the knock out price. Seven major characteristics of KODA will be explained as follows.

2.1 Discount

To attract investors, the strike price is usually discounted by 10% to 20% from current stock price. Investors may see this a good deal since they can buy the shares at a price lower than the market price.

2.2 Knock out

The contract will be expired automatically when the stock price becomes higher than the knock out price which is established by the bank. Therefore investors' profits are limited by the knock out price.

① Hong Kong Financial News, Big HKD 200 Million Accumulator Loss by a Rich Old Woman,

<http://www.hkfinancialnews.com/2009/07/30/big-hkd-200-million-accumulator-loss-by-a-rich-old-woman>, July 30th, 2009

② Kapasi, M., The Trap of the Accumulator, <http://www.caijing.com.cn/2009-05-26/110171634.html>, May 26th, 2009 (in Chinese)

2.3 Accumulate

Investors have to buy the negotiated amount of shares on every trading day before the contract expires. If the price is between strike price and knock out price, investors buy the shares every trading day; if the price is below strike price, investors have to double the purchase of the shares every trading day.

2.4 Obligation rather than option

The length of the contract is usually one year. The bank will clear the account based on daily accumulation conditions. If customers require termination of the purchase when they are losing due to fluctuation of market price, banks have no responsibility to expire the contract. Thus the loss of investors can be infinite in a bear market. Under severe circumstances, an investor can go bankrupt.

2.5 Leverage

According to the banks, investors are qualified to sign the contract as long as they are able to pay 40% of the total face value in cash or in shared mortgage. The bank will provide a loan to make up the rest of payment. Theoretically, the leverage is 2.5. However, the actual leverage is normally larger. For instance, assume that strike price is 80 dollars, contracted number of shares purchased every trading day is 1,000, the number of trading days in a year is 250, the face value of total payment is \$ 20 million. Therefore, the amount of capital an investor actually needs is only \$ 8 million and the leverage is 2.5 according to formula (1).

$$\text{Leverage} = \frac{\text{Number of shares purchased} \times \text{Strike price}}{\text{Face value of total required capital} \times 40\%} \tag{1}$$

Applying the formula, if price never falls below \$ 80, the leverage is $\frac{(250 \times 1,000) \times 80}{8,000,000} = 2.5$.

The leverages under different circumstances can be calculated when stock price drops below the strike price. The results are summarized in table 1.

Obviously, the leverage is larger when the time of price being under strike price is longer. It means that the risk is higher if the stock prices have been declining for a longer period of time in the year.

In terms of the accumulator, the contract is always binding with a bank loan agreement. Once been authorized by the customers on the series of contracts, the bank can offer loans to its customers when their accounts are run out of money without their permission. In this way, investors are able to continue to carry out buyers' obligation to purchase shares. It means that some buyers may bring themselves into a great deal of debt without awareness and that the buyers still have the legal responsibilities to repay the debt after selling out all their securities at a price lower than that when they are bought.

2.6 Curb exchange

According to Hong Kong regulations, the entrance fee of KODA is at least HKD 8 millions and the investors are regarded as professional investors, thus the investment between them and private banks does not need to be approved by the stock supervisory committee or to be supervised by the government^[3]. At the curb exchange, there is no formal place for transaction. The communication is mainly via telephone, fax and electric exchange system hence disputes often occur. Furthermore, the bank does not provide materials of the operating procedure of the investors' accounts

Table 1 Leverages Under Different Situations

Situation	Percentage of time that the current price is under strike price	Number of shares purchased	Total required capital (\$ million)	Leverage
1	20%	$250 \times (80\% + 2 \times 20\%) \times 1,000 = 300,000$	24	3
2	30%	$250 \times (70\% + 2 \times 30\%) \times 1,000 = 325,000$	26	3.25
3	40%	$250 \times (60\% + 2 \times 40\%) \times 1,000 = 350,000$	28	3.5
4	50%	$250 \times (50\% + 2 \times 50\%) \times 1,000 = 375,000$	30	3.75
5	60%	$250 \times (40\% + 2 \times 60\%) \times 1,000 = 400,000$	32	4.0
6	70%	$250 \times (30\% + 2 \times 70\%) \times 1,000 = 425,000$	34	4.25

2.7 Non-standard contract

KODA contract can be linked with shares or even the stock price index. Other than that,

asymmetric option exists in the contract. The bank has the option to stop the contract while investors have no option to do so. Non-standard contract means that the bank can design the contract at its mercy. The strike price and knock out price, which are considerably important factors, are both established in advance by the bank. Apparently, facing this opponent does not benefit investors.

The accumulator also belongs to the zero-sum game. One party loses, the other party must win. The amount of the losses equals to the amount of gains. However, in the speculation on stocks or bonds, the two parties may both win in a bull market or both lose in a bear market.

3 Risks for the Bank

3.1 Risk analysis for the bank

To consider a single contract, high risks do not only exist for investors. Banks also bear substantial risks. Let's use the above example in the leverage section and assume the knock out price is \$ 105. It is complex and difficult to calculate the profit based on the prerequisite that the bank clears the account every month; hence, the following formula is based on the assumption that the bank clears the investor account at the end of the year.

(1) Assume that after 50 days, the contract expires because share price increases above the knock out price. The formula of calculating bank loss is:

$$\text{Bank loss} = (\text{Knock out price} - \text{Strike price}) \times \text{Accumulated purchased shares} \quad (2)$$

In this condition, we have:

$$\text{Bank loss} = (105 - 80) \times 50 \times 1,000 = \$ 1,250,000$$

(2) Assume that the share price fluctuates within \$ 80 and \$ 105 for a whole year, and the current price at the end of the year is 100. The formula is:

$$\text{Bank loss} = (\text{Current price at the expired date} - \text{Strike price}) \times \text{Accumulated purchased shares} \quad (3)$$

In this condition, we have:

$$\text{Bank loss} = (100 - 80) \times 250 \times 1,000 = \$ 5,000,000$$

(3) Assume that the share price fluctuates below \$ 80 for a proportion of the year, during that time investors have to buy 2,000 shares per trading day. However, the current price at the end of the year grows to 100, which is higher than the strike price; investors will gain back their profits if they have adequate capital in account. In this condition, the total amount of purchased shares is more than $250 \times 1,000$, which is the number of shares purchased in a year if the price never falls below \$ 80, the total profits for the investors will be higher than that in the previous condition. This means that the bank loss might be enhanced because of the double purchase by the investors.

In general, the risk analysis for the bank is summarized below.

(1) If the contract is signed when the stock is in market consolidation, the bank faces the risk to lose because of the discount price.

(2) If the contract is signed during the early or middle stage of a bull market, the bank faces the risk of loss that current price exceeds knock out price.

(3) If the contract is signed at the late stage of a bull market, the bank may make up the deficits and get surpluses in later period, but also faces the risk that the contract will expire when the early price goes up above knock our price.

(4) If the contract is signed during the early or middle stage of a bear market, the bank has high possibility to gain profits, thus the risk of loss is low.

(5) If the contract is signed at the late stage of a bear market and the investors have adequate capital in their accounts, the bank faces the risk of ultimately losing after gaining a few profits in the early period.

As stated above, it can be concluded that choosing the right moment to sign the contract is crucial for the bank to avoid the risks.

3.2 Risk prevention for the bank

Based on the risk analysis for the bank, four strategies are used to prevent those risks. Firstly, the establishment of the knock out price helps control the potential loss in a reasonable range. Secondly, the bank can purchase corresponding insurance in order to transfer the risks to the insurance company. In addition, it can also seize the opportunity to sign the contract, for instance, signing the contract after the sharp rise of the stock price helps lower the risk. A more useful strategy that is widely used by banks is hedging. The bank usually sells the combination of a call option and a put option to different customers at the same time. They will also design a reverse product and sell it to other customers when they are

selling a KODA contract. The reverse product will lose if the share price falls, however, the customer under KODA contract has to double the purchase of the shares thus the bank still gains on the whole. Moreover, In consideration of obtaining the right to establish the contract price, strike price, knock out price and contract time and to choose the underlying stock, the bank seems have little chance to lose.

Though, for a single contract, the possibility for the bank to lose overweighs that to gain if the issuer seizes the bad timing, the bank is able to control the risk and diminish the loss completely with proper risk prevention strategies.

4 Risks for the Investors

4.1 Risk analysis for the investors

It is commonly agreed that investors bear high risks under KODA contracts. Four major risks are listed below.

(1) Risk of asymmetric information: the KODA contract text in English, usually longer than one hundred pages, may not be understood by the investors from mainland of China and Hong Kong. In addition, the bank staff may conceal the potential risks and mislead the customers into signing a high-risk contract.

(2) Risk of falling stock price: investors face the risk of making a loss if the stock price falls below the strike price

(3) Risk of enhanced losses: once the current price drops under the strike price, the losses will be enhanced since the number of shares is to be doubled.

(4) Risk of being forced to lose: when the amount of loss is rising sharply, the investor is not allowed to terminate the contract. Even if there is inadequate capital in the account, the bank will automatically offer loans to investors so that the purchase of the shares can continue. Therefore the investors will lose more than they imagined.

(5) Risk of being forced to close transaction: when investors use up their capital in the account or when the loan is up to the limited level, the bank will ask investors to pay earnest money or additional funds. If investors cannot pay more money to the bank, they will face compulsory liquidation. Nonetheless, investors are not exempt from repaying their debts after the liquidation. Consequently, a millionaire investor can become a debtor.

4.2 Risk prevention for the investors

Although investors from mainland of China can neither purchase relevant insurance nor conduct sterilization operation, there are four possible countermeasures for dealing the risks.

(1) The first step is to require the bank to provide the contract text in Chinese so that the risk of asymmetric information can be reduced.

(2) Another strategy is to avoid signing KODA contracts after the price has sharply risen or hit the peak thus to lower the risk of a falling price.

(3) The third measure is to renounce the option to leverage and refuse to sign the binding contract of loans. In this way, investors can calculate the maximum number of shares that they can afford under the worst circumstances in order to prevent the possibility of compulsory liquidation. Using the example mentioned, if a investor acquires \$ 8 million, he can buy 400 shares per trading day if the share price keeps stay above \$ 80.

$$\begin{aligned} \text{Number of shares purchased per trading day} &= \frac{\text{Investors total capital}}{\text{Number of trading days in a year} \times \text{Strike price}} \\ &= \frac{8,000,000}{250 \times 80} = 400 \end{aligned}$$

Considering that there is possibility to double purchase, the conservative number of shares to purchase is 200. Hence, the investor will never face compulsory liquidation even in the worst condition.

(4) Investors can take the advantage of the liquidation characteristic of the contract to diminish the risk of sharp decline of the share price. Using this method, investors need to renounce the leverage and invest the capital periodically. For example, a investor has \$ 8 million capital, splitting the money into four equal parts, he can invest \$ 2 million each time. If the stock price falls dramatically, the investor can choose not to raise additional fund so that the account will be liquidated. The total loss will merely be the money that already invested in.

In reality, investors are unable to diminish the risk of KODA completely, but they can use the above strategies to at least lower their risks.

5 Conclusions

The public regard KODA as sort of “financial drugs” nowadays. In terms of a single KODA contract, both banks and investors face risks. The risk for the bank is even higher. However, the bank has taken a series of measures to prevent such high risks, not only transferring the risk but also diminishing the risk completely. On the other hand, investors cannot do so. It is unfavorable to have the designer of the contract as an opponent. Nevertheless, investors still have their access to control the risks and gain profits. The accumulator does not necessarily mean that “I kill you later”.

References

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