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HANA FLORIANOVÁ

Masaryk University, Czech Republic

TRADING STRATEGIES FOR WARRANTS

Abstract:

In this paper we examine key strategies for trading warrants which are commonly used by traders on European Stock Exchanges. When trading warrants investor can find himself in three situations - cash extraction, hedging or speculation. For each of them different trading strategy is appropriate. Every strategy has different advantages and disadvantages. Some of them are risky, others are expensive in transaction costs and others need long period of time to perform. For the purpose of this paper we test the convenience of strategies on historical data of real warrants traded on Frankfurt Stock Exchange. We evaluate performance of each strategy and recommend their use for everyday trading.

Keywords:

trading strategies, warrants, investing

Introduction

Traders and investors have been always concerned about different trading strategies. In this paper we make research on trading strategies for warrants. Warrants are financial derivatives therefore their price is derived from the price of their underlying asset. Important feature of warrants is leverage which means that we can invest in them even with small amount of money and therefore they are reachable even for small investors. On the other hand leverage always brings higher risk (Hull, 2012).

Trading strategies for warrants which are commonly used on stock exchanges can be divided into three groups: strategy for cash extraction, strategy for hedging and strategy for speculation (Mesler, 1986).

Although warrants are usable for both hedging and speculation, Chinese research (Li and Zhang, 2011) shows that in reality warrants are constantly overpriced in comparison to the Black-Scholes model results and therefore they cannot be used for hedging effectively (Fan and Yuan, 2011). Many investors use warrants as a speculation tool despite they are more likely used for hedging. There are several ways how to hedge a portfolio. We are focusing on static delta hedging which is derived from Black-Scholes option pricing model (Black and Scholes, 1973).

In this paper we examine different strategies on real data to verify theoretical background.

Methodology

Cash extraction

Cash extraction is a situation when an investor owns shares and need cash but he does not want to sell shares because of potential bullish trend. Trading strategy often used in this situation is to simultaneously sell shares and buy corresponding call warrants. In that case, investor benefits from future share price rise without the need of holding shares. The number of call warrants which should be purchased is given by following formula:

$$N_W = \frac{N_S}{\Delta \cdot CR} \tag{1}$$

where N_W stands for number of warrants, N_S is number of shares, Δ is delta of warrants, CR is conversion ratio (the number of warrants related to one unit of the underlying asset that the warrant-holder is entitled to buy or sell).

Presume we hold shares of some company with following features:
price of a share S, delta of a warrant Δ, conversion ratio CR, price of a warrant W, price of a share in the future S_f, price of a warrant in the future W_f. We sell all shares and buy N_W warrants. Then the amount of cash is given by formula:

$$Cash = N_S \cdot S - N_W \cdot W \tag{2}$$

And the profit is

$$Profit = N_W \cdot (W_f - W) \quad (3)$$

If we holded shares we would get profit of:

$$Profit^* = N_S \cdot (S_f - S) \quad (4)$$

We can use cash to differentiate portfolio, make some extra profit and lower the risk of our portfolio all at the same time. However we must bear in mind that in this strategy we do not get dividends as we would if we hold shares. In addition we risk greater losses if the market does now behave as we expected and moreover we omit transaction costs in our scenario which also affects profit.

Hedging

In the scenario of hedging we expect a share price to decrease but we are not willing to sell our shares. This may be due to several reasons: voting rights, divident or simply because of longterm growth prospect. In this scenario we can minimize possible losses by purchasing corresponding put warrants as the change in price of a put warrant is inverse to the change in price of an underlying share. While the value of the investor's share portfolio will decrease in a declining market, the loss can be partially (or even fully) offset by the rise in value of the put warrants. The amount of put warrants which should be purchased or sold is given by formula:

$$N_W = \frac{N_S}{\Delta \cdot CR} \quad (5)$$

where N_W stands for number of warrants, N_S is number of shares, Δ is delta of warrants, CR is conversion ratio.

Presume we hold shares of some company and we buy corresponding number of warrants N_W to get delta-neutral portfolio.

If the price of a share declines ($S_f - S < 0$) the price of put warrants would increase by W_f-W and the profit of warrants would balance loss from shares and

$$N_W \cdot (W_f - W) = N_S \cdot (S_f - S) \quad (6)$$

This scenario is known as static hedging as we do not rebalance our portfolio during the time.

Speculation

Like other financial instruments, warrants may be also used for speculation. In this scenario investor wants a quick profit. When we expect bullish trend in some share's value, but we do not have enough money to buy a share we can use call warrants to gain profit from this scenario. We back this scenario by one feature of warrants – unlimited upside potencial, limited downside. Limitation is given by amount of money paid for the warrants (premium). Investors often use warrants for speculation instead of the underlying asset because they are cheaper and they use leverage. When speculating with warrants we should be aware of the term effective gearing. Effective gearing calculates the percentage change in the warant price relative to a one per

cent change in the price of the underlying asset. It can be calculated by the following formula:

$$\Omega = \frac{S \cdot \Delta}{W \cdot CR} \tag{7}$$

where Ω stands for effective gearing, S is a price of a share, Δ is delta of warrants, CR is conversion ratio and W is a price of a warrant.

In general, a higher effective gearing translates to a higher profit potential, but also means a higher level of risk. Beyond the deployment of the speculative strategy which is based on gearing, investors should also bear in mind the investment basics - cut loss quickly if the expected trend is proven wrong.

Assume we want to buy some shares because we anticipate their price to rise soon. Instead of them we can use the same amount of money to buy call warrants. The amount of warrants to buy is then:

$$N_W = \frac{N_S \cdot S}{W} \tag{8}$$

where N_W stands for number of warrants, N_S is number of shares, S stands for price of a share and W for price of a warrant.

Presume that price of a share in the future is S_f and price of a warrant in the future is W_f. Profit from our strategy is then:

$$Profit = N_W \cdot (W_f - W) \tag{9}$$

The return from this strategy is equal to

$$Return = \frac{Profit}{Investment} \cdot 100\% \tag{10}$$

And the return from warrants is much higher than the profit from shares.

Data

Data was gathered from Frankfurt Stock Exchange. Cash extraction strategy was tested on Adidas shares. In table 1 we can see information about shares and warrants.

Table 1 Basic features of Warrant on Adidas share

WKN	ISIN	Ns	delta	CR	S	W	Sf	Wf
VS5ZGY	DE000VS5ZGY5	1000	0.756	0.1	106.29	1.555	110.12	1.78

Source: Author's own adjustment based on Frankfurt Stock Exchange Data

Hedging strategy was tested on BMW shares. In table 2 we can see information about shares and corresponding warrants.

Table 2 Basic features of Warrant on BMW share

WKN	ISIN	Ns	delta	CR	S	W	Sf	Wf
US24QK	CH0236965478	1000	-0.663	0.1	82.6	2.03	71.36	2.9

Source: Author's own adjustment based on Frankfurt Stock Exchange Data

Speculation strategy was tested on Facebook shares. In table 3 we can see information about shares and corresponding warrants.

Table 3 Basic features of Warrant on Facebook share

WKN	ISIN	Ns	CR	S	W	Sf	Wf	Ω
PB2K7Z	DE000PB2K7Z8	10	0.1	2865.6	1.65	3095.1	2.02	4.16

Source: Author's own adjustment based on Frankfurt Stock Exchange Data

Results

Having calculated cash extraction strategy we got following results, see table 4.

Table 4 Cash extraction strategy results

Nw	cash	profit	profit*
13228	85721	2976	3830

Source: Author's own adjustment based on Frankfurt Stock Exchange Data

In this strategy we should sell all thousand shares and instead of them buy 13228 warrants. Having done that, we get 85721 of free cash which we can use for other purposes. If we compare profit from our strategy with profit we would get if we holded shares, we see that profit is lower even though in theory profits should be the same. In this case the difference between profits is caused mainly by transaction costs linked to the selling of shares and buying warrants, also it shows us that the assets are not priced correctly.

Concerning hedging strategy we got results presented in table 5.

Table 5 Hedging strategy results

Nw	profit	profit*	difference
15083	13122	-11240	1882

Source: Author's own adjustment based on Frankfurt Stock Exchange Data

During the process of hedging we should buy 15083 warrants for every thousand shares we own. Hence, when the price of shares went down in our scenario, put warrants have balanced losses. With our strategy the profit from warrants exceeded loss from shares by the difference of 1882 even though profits should be equal. Similarly to the cash extraction strategy, this inequality may be explained by improper pricing of assets and irregularities on financial markets.

Strategy of speculation resulted as presented in table 6.

Table 6 Speculation strategy results

Nw	profit	profit*	return	return*
17367	6426	2295	22%	8%

Source: Author's own adjustment based on Frankfurt Stock Exchange Data

Pursuing speculation strategy we would buy 17367 call warrants for every 10 Facebook shares. In that case we would get higher profit than if we simply holded shares. The relative return from speculation strategy was approximately three times greater than hypothetical return from shares. It is not very close to the effective gearing which was theoretically calculated as 4.16. It points to the fact that real markets does not support theory of effective markets as they misprice assets and also miscalculate asset's features.

Conclusion

There are three trading strategies typically used when trading warrants on stock exchanges: cash extraction, hedging and speculation. In our paper we followed these strategies and tested their theoretical background on real financial markets, namely Frankfurt Stock Exchange.

We found out that during the cash extraction strategy it is possible to get extra cash by selling shares and buying corresponding call warrants instead of them, but the profit is lower compared to the one without performing any strategy. Knowing that the profit is not the same for both situations as theory suggests, the question is if the investors are willing to pay to get extra cash. In the case of hedging we tested strategy of buying put warrants corresponding to the shares we own. The results are that when the price of shares is going down warrants are able to diminish the losses or in our scenario even exceed them and make the portfolio profitable. This is not in accordance with theory which states that this portfolio's profit should be zero. Having done research on speculation we performed strategy of buying call warrants with high effective gearing instead of shares to gain greater profits from anticipated increase in price in the future. In this scenario we found out that the relative profit from our strategy is multiple times greater than if we did not permorm it. It does not match the calculated effective gearing though.

From our findings we conclude as following. Trading strategies for warrants may bring higher profits, lower risk or extra cash, but investors and traders have to be caucious about differences between theoretical background and real markets' behavior as they do not always behave as presumed: there are transaction costs, spreads, mispricings, miscalculations and various irregularities which divert results.

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