

# Investment Portfolio Risk Handbook

DEGIRO

# Contents

1. Introduction .....	2
2. Portfolio Overview .....	4
3. Portfolio Risk in Practice .....	6
4. Risk with Active and Trader account.....	23

# 1. Introduction

This handbook provides information on the calculation of portfolio risk at DEGIRO.

The different components of portfolio risk are discussed. You will also find information on the structure of the margin and the free scope. With the aid of some practical examples, it is possible to gain a step-by-step understanding of the structure of portfolio risk on the basis of different portfolio compositions. The main differences in the calculation of portfolio risks between a 'trader' account and an 'active' account at DEGIRO will also be explained.

This handbook is a supplement to the guide *'Further Information on Investment Services'*.

## 2. Portfolio overview

On the website, you can request an up to date portfolio overview showing both the free scope and the available margin of your investment portfolio by clicking on 'Calculation'. The outline below presents an example of a portfolio overview:

**Available to Trade** ⓘ ✕

<b>Margin statement</b> ⓘ		11-06-2015 - 16:50
Value of portfolio	€ 302,000.00	ⓘ
Cash balance	€ -5,000.00	ⓘ
<b>Net liquidity</b>	<b>€ 297,000.00</b>	ⓘ
Risk portfolio	€ 200,000.00	ⓘ
<b>Margin (deficit/surplus)</b>	<b>€ 97,000.00</b>	ⓘ

<b>Credit facilities</b> ⓘ		11-06-2015 - 16:50
Collateral value	€ 211,400.00	ⓘ
Cash balance	€ - 5,000.00	ⓘ
<b>Deficit/available</b>	<b>€ 206,400.00</b>	ⓘ

You can see from the above portfolio overview that there is a margin surplus of €97,000 and an available credit facility of €206,400. DEGIRO only accepts orders from its clients if this does not give rise to a deficit in the margin or the credit facility. The above overview shows you that it is therefore possible to withdraw a sum of up to €97,000 from the investment account or to buy securities for **at least** this amount.

## 2.1 Margin review

The margin review section shows the margin (i.e. the portfolio value and the cash balance) in relation to the portfolio risk.

### 2.1.1 Value of portfolio

DEGIRO determines the value of the investment portfolio on the basis of the latest known prices on the stock exchange. In most cases, the bid price applies to the long positions and the ask price to the short positions.

### 2.1.2 Cash balance

The cash balance shows the balances of all cash accounts in pounds sterling. If you hold a cash balance in a foreign currency, this will be expressed in pounds sterling and settled with the other cash balances.

### 2.1.3 Net liquidity value

The net liquidity value is obtained by adding the value of the portfolio to your cash balance. The net liquidity value is an important value, because this value must be higher than the portfolio risk. If the net liquidity value is lower than the portfolio risk, a margin deficit arises and the deficit procedure comes into effect.

### 2.1.4 Portfolio Risk

The risk of an investment portfolio depends on the composition of the portfolio. The risk of an investment portfolio will also change through price fluctuations within your investment portfolio. The risk will usually diminish by maintaining a broader spread over more financial instruments. DEGIRO has the possibility of adjusting the risk weighting immediately if circumstances change, so that the portfolio risk increases or diminishes.

### 2.1.5 Margin (deficit/surplus)

A deficit in the margin means that the value of the portfolio, including the cash balance, is lower than the portfolio risk. You are expected to clear this deficit immediately by making a transfer to DEGIRO and/or by closing positions. If DEGIRO observes a deficit, you will be informed of this in an e-mail message to the e-mail address available to us.

A margin surplus means that you could still make use of the possibilities to expand your portfolio. It is advisable to keep some scope available, due to fluctuations in the value of your investment portfolio and the portfolio risk. If there is a deficit in your credit facilities, you can only conduct transactions that have a positive effect on your cash balance.

## 2.2 Credit facilities

If you can make use of securities credit, you receive a credit facility at DEGIRO for collateral of securities. The amount of this credit facility depends on the value of the collateral and the accompanying credit percentages.

### 2.2.1 Collateral value

The value of the collateral serves as cover for the securities credit taken up or still to be taken up. In most cases, the collateral value is fixed at 70% of the value of the shares and investment funds and 80% of the value of the bonds. This credit facility is in accordance with the guidelines laid down in the Financial Transactions Act (WFT).

### 2.2.2 Cash Balance

The cash balance shows the balances of all cash accounts in pounds sterling. If you hold a cash balance in a foreign currency, this will be expressed in pounds sterling and settled with the other cash balances.

### 2.2.3 Deficit/available

A deficit in the credit facility means that the amount of the securities credit exceeds the collateral value. This can be caused by a sudden drop in the value of the shares, investment funds and/or bonds in your portfolio. Other reasons might include an alteration in the cash balance, settlement of option positions or debit interest charges.

An available credit facility means that the total collateral value exceeds the utilised credit. You can use the available balance to expand your investment portfolio. This is only possible if it does not lead to a margin deficit.

### 3. Portfolio risk in practice

(N.B.: to be read in conjunction with **Further Information on Investment Services: Net Liquidation Value, Risk, Cash Margin and Securities Margin**)

In order to outline the different aspects of the DEGIRO portfolio risk, we will examine the different possibilities that might arise in building an investment portfolio. The aim of this is to provide you with an insight into both the structure and the possibilities that the risk model offers you when constructing a portfolio. The following examples are based on sample portfolios that make use of the 'trader' facility.

#### 3.1 Undiversified portfolio

A client holds 100 shares in ING Group NV at a price of €10. Due to the lack of diversification of the investments, the event risk will be the determining factor in this type of investment portfolio, as shown by the table below:

Table 1: Risk calculation for undiversified portfolio

Portfolio	€1,000	ING Group NV (€100 to€10.00)
Event risk	€500	50% event risk of €1,000
Net investment category risk	€200	20% net risk of €1,000
Net sector risk	€300	30% sector risk of €1,000
Gross investment category risk	€70	7% gross risk of €1,000
<b>Portfolio risk</b>	<b>€500</b>	<b>Risk based on event risk</b>

The composition of the portfolio has determined that the event risk exceeds the other risks within the portfolio. By increasing the diversification of the portfolio, the risk could remain unchanged or rise to only a limited extent. In this example, liquidity risk and currency risk play no role in the calculation of the portfolio risk.

### 3.2 Investment portfolio with sector risk

A client holds a portfolio spread between Aegon NV and ING Group NV shares, where the value of the two positions are equal to €800 and €1,000 respectively. This example shows that with an investment of €800 in Aegon NV, the risk increases only by €40. This is because the sector risk lies higher than the highest event risk within the portfolio. Nevertheless, this remains an undiversified portfolio, for which a risk premium of 30% applies. A brief explanation of the calculation of the risk for this investment portfolio is presented below.

Table 2: calculation of risk sector for a portfolio

Aegon NV	€800	Sector Financials
ING Group NV	€1,000	Sector Financials
<b>Value of Portfolio</b>	<b>€1,800</b>	

Event risk	€500	50% event risk of €1,000 (ING)
Net investment category risk	€360	20% net risk of €1,800
Net sector risk	€540	30% sector risk of €1,800
Gross investment category risk	€126	7% gross risk of €1,800
<b>Portfolio risk</b>	<b>€540</b>	<b>Risk based on sector risk</b>

The total risk of €540 is the result of a sector risk in financials, for which a risk weighting of 30% applies. The risk of the position in this sector exceeds the highest event risk, which is set at €500 for the position in ING Group NV. In this example, liquidity risk and currency risk play no role in the calculation of the portfolio risk.



### 3.3 Investment portfolio with a net investment category risk

A client's investment portfolio is divided among Aegon, ING Group NV and RDSA shares with a value of €800, €1,000 and €1,100 respectively. All these shares are listed in euros, as a result of which there is no weighting of the Risk calculation for currency risk. As a result of the high liquidity of these shares, there is no liquidity risk and therefore no requirement for extra security. Due to the composition of the portfolio, there is a risk relating to the net position of the investment portfolio. The table below shows the outcomes of the calculation of the risk for the investment portfolio.

Table 3: Risk calculation based on net investment category position

Aegon NV	€800	Financial Sector
ING Group NV	€1,000	Financial Sector
Royal Dutch Shell A	€1,100.00	Energy Sector
<b>Value of Portfolio</b>	<b>€2,900.00</b>	

Event risk	€550.00	50% event risk of €1,100.00 (RDSA)
Net investment category risk	€580.00	20% net risk of €2,900.00
Net sector risk	€540	30% sector risk of €1,800
Gross investment category risk	€203.00	7% gross risk of €2,900.00
<b>Portfolio risk</b>	<b>€580.00</b>	<b>Risk based on net investment category</b>

The total risk of €580 now arises from an investment portfolio invested in the 'shares' investment category. Within this investment category, a risk weighting of 20% of the net position and 7% of the gross position applies. In this example, the net investment category risk exceeds the sector risk, the event risk and the gross investment category risk.

### 3.4 Investment portfolio with a leveraged product

The risk for leveraged products such as turbos, speeders and sprinters is equal to 100% of the current value. When buying such a product, you should therefore have the full investment available as collateral. This also applies for other products for which DEGIRO has set the risk at 100%. Generally this concerns high risk financial instruments such as warrants, as well as shares with relatively limited liquidity and/or market value etc.

### 3.5 Investment portfolio with a currency risk

The currency risk is expressed through investments in financial instruments listed in a currency other than euros. The value of this investment expressed in euros will rise or fall with every

movement in the exchange rate. For that reason, DEGIRO requires you to hold surety for this risk. The same applies for credit or credit facilities in foreign currencies in the cash account. In order to illustrate the effect of currency risk of an investment denominated in foreign currency, we assume the following investment portfolio (please see the table below).

Table 4: calculation of currency risk

Aegon NV	€800	Financial Sector
ING Group NV	€1,000	Financial Sector
Swatch Group	CHF 950.00	Retail Sector (CHF/EUR = 1.20)
<b>Value of Portfolio</b>	<b>€2,940.00</b>	

Event risk	€570.00	50% event risk of €1,140.00 (Swatch Group)
Net investment category risk	€580.00	20% net risk of €2,900.00
Net sector risk	€540	30% sector risk of €1,800
Gross investment category risk	€203.00	7% gross risk of €2,900.00
Currency risk	€80.00	CHF 950 * 7% * CHF/EUR
<b>Portfolio risk</b>	<b>€580.00</b>	<b>Risk based partly on the currency risk</b>

The currency risk is set at €80, assuming an asset value of CHF 950, a 7% risk weighting and a CHF/EUR exchange rate of 1.2. If this had been a short Swatch Group position, the currency risk outcome would also have been €80. It makes no difference here whether the net liquidation value is positive or negative.

### 3.6 Investment portfolio long – short strategy

A client holds a portfolio according to a long-short strategy. The purpose of this strategy is to make use of potential under or over-valuation of shares, for example within a particular sector. It is notable from the investment portfolio table below that the total value of the portfolio results in a zero figure. The long-short strategy has ensured that on balance no investment is needed, apart from collateral for the margin. Table 5 shows the structure of an investment portfolio with a long-short strategy.

Table 5: investment portfolio according to long-short strategy

Aegon NV	€1,000.00	€-1,000.00	ING Group NV
Societe Generale	€1,100.00	€-1,100.00	BNP Paribas
Royal Dutch Shell A	€900.00	€-900.00	Total
Ahold	€1,000.00	€-1,000.00	Carrefour
<b>Value long</b>	<b>€4,000.00</b>	<b>€-4,000.00</b>	<b>Value short</b>

The risk of the above portfolio is based on the gross position, as this risk exceeds the net sector risk and the net investment category risk. In the risk calculations for a gross position in the 'shares' investment category, a 7% risk weighting is used. The total gross position of the above portfolio is €8,000, as a result of which the portfolio risk is €560. A further explanation of how this risk arises follows in Table 6.

Table 6: risk calculation of the long-short strategy

<b>Value of Portfolio</b>	<b>€0.00</b>
<b>Net investment category risk</b>	<b>€0.00</b>
<b>Net sector risk</b>	<b>€0.00</b>
<b>Gross investment category risk</b>	<b>€8,000.00</b>

Event risk	€540	50% event risk of €1,100 (Soc. Gen./ BNP)
Net investment category risk	€0.00	20% net risk of €0.00
Net sector risk	€0.00	30% sector risk of €0.00
Gross investment category risk	€560.00	7% gross risk of €8,000.00
<b>Portfolio risk</b>	<b>€560.00</b>	<b>Risk based on gross investment category risk</b>

### 3.7 Investment portfolio including options

DEGIRO uses an option valuation model to calculate the risk on options. This option valuation model calculates the value of the options through movements in for example, the underlying security and the implicit volatility. For the calculation of the risk of the option portfolio per share or per index, DEGIRO uses a fixed set of scenarios. A further explanation of the risk model is provided in the paragraph headed '3.7.1 Options risk model'. As we see later in this chapter, the composition and size of an options portfolio also influences the risk here. In order to provide an insight into the operation of the risk model for different option portfolios, examples of a number of standard option strategies for a 'trader' account follow below.

### 3.7.1 Options Risk model

The options risk model can be applied for both share and index options and will make an estimate of the risk regardless of the composition of the options portfolio. In this regard, the risk includes the amount that DEGIRO holds for the value movements that it estimates could occur for the options portfolio within a period of two trading days.

The risk model takes account of how the valuation of an option is realised. Movements in the valuation of an option depend on:

- Value of the share or index
- Level of the implicit volatility
- Maturity
- Amount of the dividend
- Amount of the interest

In order to determine the risk of an option position, the risk model combines the different elements listed above. This influence of the different elements and how they are related is also referred to as a 'scenario'. A combination of a fall in the value of the share, an increase in the implicit volatility and a reduction in the maturity by one trading day, for example, is a scenario. In order to give an impression of the standard scenarios for an index, a chart explaining this in more detail is presented below. The following example makes use of two option positions on the AEX index, with a maturity of one year and an index status of 400.

Table 7: Risk model

Risk model	Standard scenario*									Extreme scenario **	
Movements in index (400)	-15%			0%			15%			-60%	60%
Movements in volatility	-15%	0%	15%	-15%	0%	15%	-15%	0%	15%	0%	0%

<b>1 Call AEX 390</b>	-	-	-	-279	-1	279	4.294	4.419	4.575	-310	3.353
	1.913	1.816	1.691								
<b>1 put AEX 410</b>	4.731	4.779	4.853	-267	-4	272	-	-	-	3.437	-445
							2.492	2.282	2.051		
<b>Portfolio risk</b>	2.818	2.963	3.162	<b>-546</b>	-5	551	1.802	2.137	2.524	3.127	2.908

\* Standard scenario consists of 12 movements in the share (or index) with accompanying movements in the implied volatility  
\*\* Extreme scenario: factor 5 of movement in share (or index) in the standard scenario (including standard increases and decreases in volatility), outcome is scaled back by a factor of 6.5.

For the sake of convenience, the overview shows only a small part of the different scenarios. Thus the standard scenario will not only calculate a movement of 15% in the index alone (share options 20%, barring changes), it will also assess the scenario for movements of 2.5%, 5% etc. in the index and the accompanying changes in the implicit volatility. It is also notable that in the scenario with a 0% movement in the index and volatility, still a loss of €1 arises for the call option and €4 for the put option. This effect is related to the reduction in the maturity by one trading day. The impact is small with a maturity of one year, but increases as the maturity diminishes. The movement in the implicit volatility for options with a maturity of more than one year is 15%, but increases as the maturity diminishes. In table form, this amounts to the following.

Table 8: movements in implicit volatility

<b>Maturity of options</b>	<b>Movements in implicit volatility</b>
< 30 calendar days	50%
90 calendar days	35%
180 calendar days	25%
> 360 calendar days	15%

The purpose of the extreme scenario, also known as the OTM, the out-of-the-money scenario, is to determine the risk of options with an exercise price that differs sharply from the price of the share of the index. For options of this kind, the risk according to the standard scenario is underestimated. By calculating an extreme scenario, it is possible to determine a risk weighting for options of this kind.

For the interest and dividend risk, a standard weighting of 0.5% of the contractual value of the option is calculated. Index options form an exception to this. A 0.2% risk weighting applies for these options where the maturity is less than 1 year. As soon as the risk or the total weighting per share or index exceeds the standard or the extreme scenario, this amount will apply for the risk.

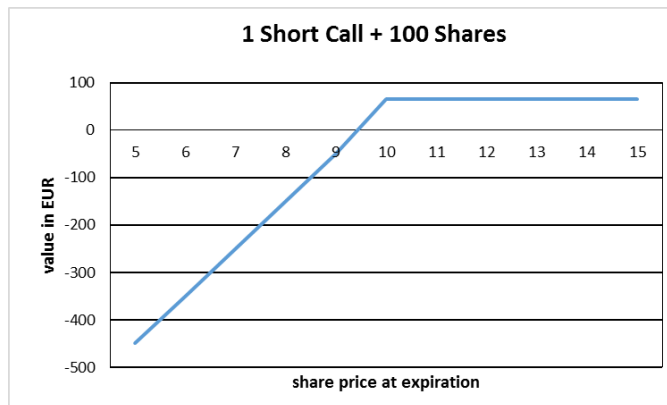
All option positions and where possible, other positions in the underlying security are included in the determination of the portfolio risk. It therefore makes no difference which strategy or options positions are taken. The model only selects the scenario in which the loss is highest.

### 3.7.2 Practical examples of option strategies

The development of the risk for the different option portfolios is based on options for share 'A', the price of which is equal to 10. The implicit volatility for all options is set at 20% on an annual basis with an expected dividend of 2% per year. For the 'A' share, a standard 20% weighting applies for the current share price. For a calculation of the event risk of a share option portfolio, a minimum impact of 50% applies (please see chapter 3.1 for further information).

#### 3.7.2.1 Written call option in combination with 'long' shares

Hedged writing of a call option can take place through the purchase of the same number of underlying shares. On expiry, the investor must deliver the shares if the investor is called to do so. In all other cases, the call expires worthless and the investor retains the value of the written option received. The results on expiry are shown below.



Writing a call option for shares reduces the risk of the investment portfolio as shown by Table 9. Without the written call option, the risk would turn out at €200. The call option reduces the risk to €145. In the scenario with a 20% increase in share 'A' and a 15% increase in the volatility, writing an 'at-the-money' option gives a loss of €143. On the other hand, a fall in share 'A' has a positive impact on the value of the written call option and thus reduces the risk of the overall portfolio.

The value of the share portfolio is €1,000 and that of the option position -/€70, as a result of which there is sufficient security to be able to bear the risk in the portfolio. The credit facility for the shares remains unchanged, at 70% of the value of the share portfolio.

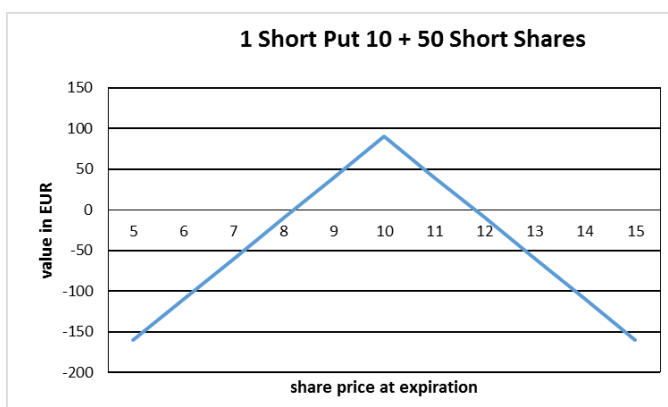
Table 9: portfolio risk of written call option with purchased shares

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
1 short Call 10 A	65	55	48	30	12	-12	-47	-70	-124	-143

<b>100 long shares A</b>	-200	-200	-100	-100	0	0	100	100	200	200
<b>Portfolio risk</b>	-135	-145	-52	-70	12	-12	53	30	76	57

### 3.7.2.2 Written put option in combination with 'short' shares

'Going short' in shares means that the investor sells the shares without actually possessing them. In due course, the investor will have to buy back the securities. Simultaneous writing of a put option with 'short' shares presents the following picture on expiry.



The following option portfolio with shares highlights how investing with borrowed shares ('going short') reduces the risk on a written put option. On writing of the option position, the risk would equal €141, while the use of 'short' shares reduces the risk of the combination to €47.

Table 10: portfolio risk of written put with 'short' shares

<b>Movements in share</b>	<b>-20%</b>		<b>-10%</b>		<b>0%</b>		<b>10%</b>		<b>20%</b>	
<b>Movements in volatility</b>	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
<b>1 short Put 10 A</b>	-131	-141	-50	-68	12	-12	51	28	72	53
<b>50 short A shares</b>	100	100	50	50	0	0	-50	-50	-100	-100

Portfolio risk	-31	-41	0	-18	12	-12	1	-22	-28	-47
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### 3.7.2.3 Written 'out-of-the-money' options

Writing OTM options leads to underestimating the risk in the standard impact scenario. With a sudden 20% movement in the share, the implicit volatility of the above options will be higher under normal circumstances than an increase of 15%. DEGIRO uses an extreme scenario, also known as an OTM scenario (see the paragraph headed '3.7.1. Risk Model') which generates a more probable risk value for options of this kind. This is because the use of the standard portfolio leads to a portfolio risk of €22. Through the use of the OTM scenario, the risk equates to €75.

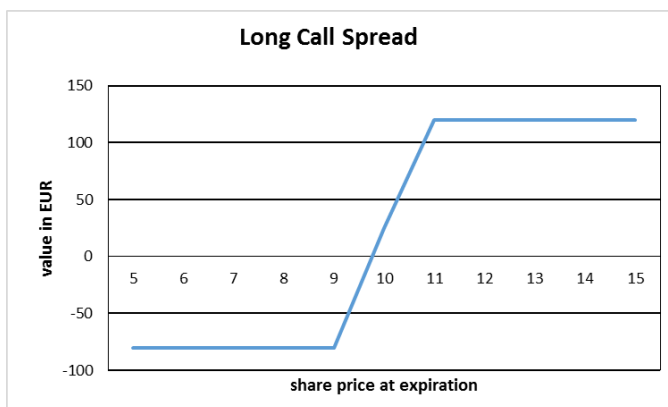
Table 11: written 'out-of-the-money' options

Movements in share	-20%		-10%		0%		10%		20%		OTM scenario	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%	Fall	Rise
1 short put 5 A 1 year	0	-1	0	0	0	0	0	0	0	0	-75	0
50 short call 15 A 1 year	1	1	1	1	1	-2	-1	-9	-6	-22	0	-73
Portfolio risk	1	0	1	1	1	-2	-1	-9	-6	-22	-75	-73

### 3.7.2.4 Long call spread

A long call spread is a combination of a bought call with a lower strike price than the written call. Both options have the same maturity. Overall, the investor in this long call spread will invest a sum on purchase, perhaps with the expectation that the share will have risen higher than the strike price of the written option at expiration. The result of this strategy on expiry is shown below.





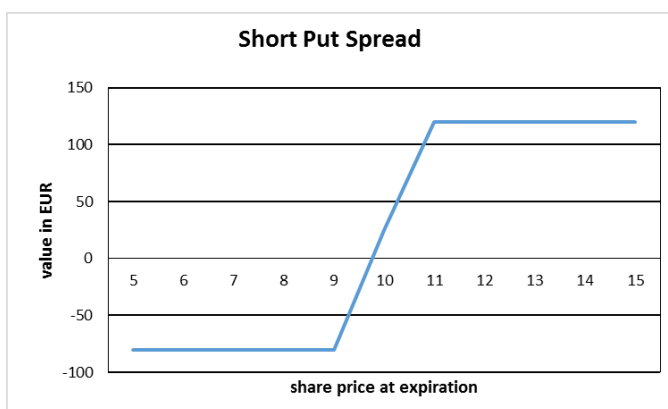
In the table below, the loss on the long call is higher than on the short call. The value of the long call is €1.16 and will fall if the price of share 'A' falls. With a 20% fall in the share and a 15% fall in the implicit volatility, the loss rises by €106. With a sudden increase in the price of share 'A', the value of the strategy will increase. The risk in this long call spread arises on a fall in the price of share A and equates to €71. The value of the portfolio hedges the risk when the current position is taken. The value of the strategy is €82, with €116 for the long call and -/- €34 for the short call.

Table 12: portfolio risk long call spread

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
1 long call 9 A 1 year	-106	-90	-70	-49	-10	10	69	85	159	169
1 short call 11 A 1 year	35	30	29	16	10	-11	-27	-53	-86	-111
Portfolio risk	<b>-71</b>	-60	-41	-33	0	-1	42	32	73	58

### 3.7.2.5 Short put spread

A short put spread is distinguished by a combination of a bought put with a lower strike price than the written put. Both options have the same maturity. Both a short put spread and a long call spread show a similar pattern in their results. The graph below shows the development of the result for a short put spread on expiry.



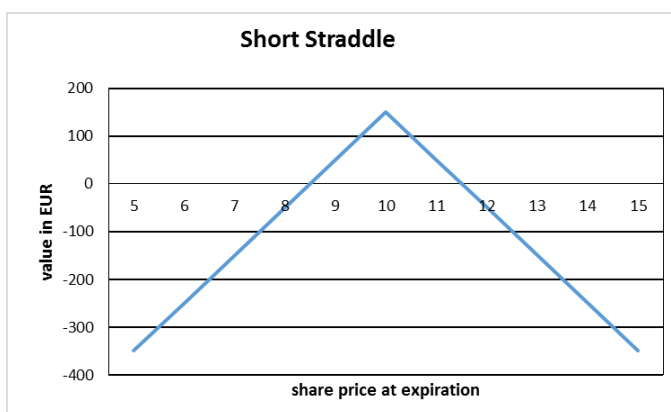
The portfolio risk on a short put spread with a maturity of one year is shown in the table below. It can be deduced from the table that the loss in this combination is €28 if the share and the implicit volatility fall simultaneously. On the one hand, the bought put limits the loss if the share price falls sharply. The downside is that with a direct increase in the share, the profit diminishes through the sold put. Setting up this short put spread generates an amount of €20 to cover the obligations arising from this strategy. This means that an investment of only €8 is needed to set up this position. After all, the value of the portfolio and the cash balance is then the same as the portfolio risk of €28. The value of the written put is €72 and that of the sold put is €52.

Table 13: portfolio risk of short put spread

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
1 long put 10 A 1 year	133	143	51	69	-12	12	-52	-29	-75	-56
1 short put 11 A 1 year	-161	-166	-70	-82	10	-10	72	46	113	88
Portfolio risk	<b>-28</b>	-23	-19	-13	-2	2	20	17	38	32

### 3.7.2.6 Short straddle

A straddle is a combination of a put and a call with the same strike price and maturity. The investor in a short straddle expects the price of the underlying security to move towards the strike price on expiry. For writing a straddle, the investor receives the sale price for the risk associated with this strategy. However, a sharp fall or rise in the price of the share will lead to a loss, since the premium received might not cover the extreme movement. The graph below shows the results of a straddle for different prices on expiry.



A development of the risk of a straddle with a maturity of one year follows in Table 14. Once again, this shows that the loss on a short straddle arises with a fall or rise in the price of the underlying share. The portfolio risk equates to €90. On taking this position, the investor in a short straddle must therefore invest a margin of at least €90 to cover the risk. As the table below shows, the increase in the value of the short put of €53 only partially hedges the loss in the value of the short call of €143.

Table 14: portfolio risk short straddle

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
1 short put 10 A	-131	-141	-50	-68	12	-12	51	28	72	53
1 short call 10 A	65	55	48	30	12	-12	-47	-70	-124	-143
Portfolio risk	-66	-86	-2	-38	24	-24	4	-42	-52	<b>-90</b>

### 3.7.2.7 Long strangle

A strangle is a combination of a put and a call with the same maturity, but where the long call has a higher strike price. The investor in a long strangle can never lose more than the premium paid. The value of the long strangle therefore hedges the risk throughout the life of the options. The maximum loss for the investor is equal to the investment on the purchase of the strategy. The graph below shows the result of a long strangle with a price of the share on expiry.

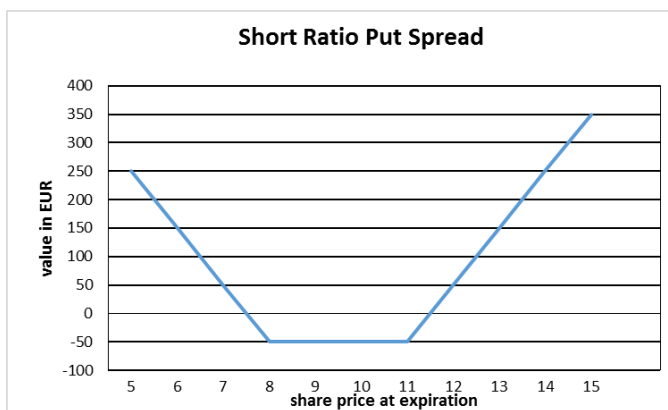


Table 15: portfolio risk long strangle

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
1 long put 8 A 1 year	50	68	12	29	-6	7	-13	-5	-15	-11
1 long call 11 A 1 year	-33	-28	-27	-15	-10	10	25	51	81	107
Portfolio risk	17	40	-15	14	-16	17	12	46	66	96

The risk of the long strangle equates to €16. This loss arises from the fall in the implicit volatility and the unchanged price of the underlying share.

### 3.7.2.8 Time spread

A time spread is a combination of a long and a short option with the same strike price, but where the long option has a longer maturity than the short option. The long option hedges the risk of a short option, to a certain degree. With an option that can be exercised in the interim, the 'American-style option', there is a risk that, among other things, the investor may have to rely on the short call and has not exercised the long call itself. This may mean that the investor loses dividends as a result, when the share goes ex-dividend. In the case of a European-style option, which cannot be exercised before the maturity date, the risk arises from a difference between the interest, volatility and expected dividends of the two options. A difference therefore arises in the valuation of options and changes in their prices.

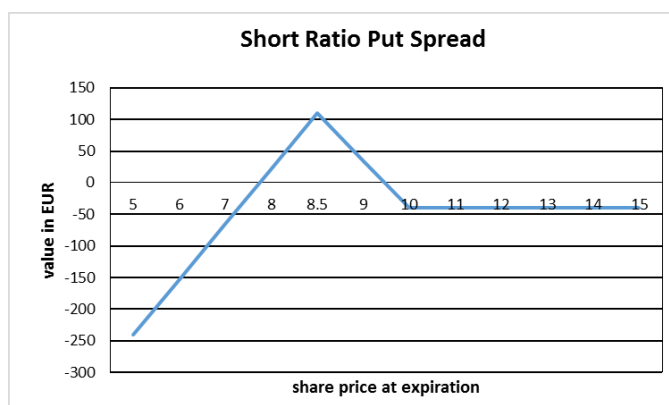
The results of this option strategy cannot be set up in a graph with the outcomes on expiry, since the maturities of the options differ. For that reason, only the portfolio risk of a time spread is explained in the table below. A time spread gives a maximum loss of €19 with a direct rise in share 'A' and a fall in the implicit volatility. A long call does not, therefore, hedge the loss in the value of the short call in all cases. The reason for this is that the movements in the volatility increase as the maturity of the option diminishes (as shown in Table 8: Movements in implicit volatility).

Table 16: portfolio risk of time spread

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-/-	+/+	-/-	+/+	-/-	+/+	-/-	+/+	-/-	+/+
1 short call 10 A 3 month	38	35	36	23	14	-14	-60	-79	-157	-163
1 long call 10 A 6 month	-43	-40	-39	-25	-12	12	55	74	147	156
Portfolio risk	-5	-5	-3	-2	2	-2	-5	-5	-10	-7

### 3.7.2.9 Short ratio put spread

An investor who sets up a short ratio put spread uses part of the premium received on the written put to buy a long put to hedge part of the risk. This creates a situation on expiry in which, with this strategy, a loss occurs only if the price falls by more than 15%. With a virtually unchanged price, the yield is the difference between the costs of the put and the proceeds of the written puts. The profit increases as the price on expiry moves towards €8.50. The graph below shows the result of this strategy on the expiry date for different share prices.



For the portfolio risk that DEGIRO uses, the loss will arise with a direct fall in the price and an increase in the implicit volatility. Table 17 shows the impact of this, developed for a short ratio put spread. The loss is limited to €31. Again, the impact of both positions is combined in order to determine the ultimate risk.

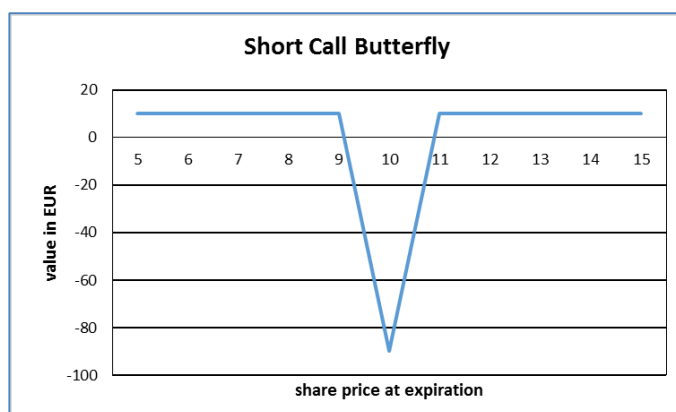
Table 17: portfolio risk short ratio put spread

Movements in share	-20%		-10%		0%		10%		20%	
Movements in volatility	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%
1 long put 10 A 1 year	131	141	50	68	-12	12	-51	-28	-72	-53

2 short put 8.5 A 1 year	-136	-172	-36	-77	16	-17	38	16	46	34
Portfolio risk	-5	-31	14	-9	4	-5	-13	-12	-26	-19

### 3.7.2.10 Short call butterfly

A short call butterfly is an option strategy in which both a long and a short call spread are set up. The principle is that with a short call butterfly, both the long calls have the same strike price. A short butterfly gives the investor the possibility of limiting the risk by making a considered choice from among the available strike prices. The maximum loss with a short butterfly is the difference between the strike prices less the premium to be received. With a short call butterfly, this loss will occur if the price on expiry turns out at the strike price of the calls purchased, as is made clear in the graph below.



In the example in which a short call butterfly is set up as shown in the above graph, the maximum loss on expiry is €100 less the net proceeds to be received from the option strategy. The maximum loss will occur on expiry at a share price of €10. The portfolio risk of the short call butterfly is currently €3 with a maturity of one year. This loss arises with a combination of an unchanged share price and a 15% fall in the implicit volatility.

Table 18: portfolio risk short call butterfly

<b>Movements in share</b>	<b>-20%</b>		<b>-10%</b>		<b>0%</b>		<b>10%</b>		<b>20%</b>	
<b>Movements in volatility</b>	-15%	15%	-15%	15%	-15%	15%	-15%	15%	-15%	15%

1 short call 9 A 1 year	106	90	70	49	10	-10	-69	-85	-159	-169
2 long call 10 A 1 year	-130	-110	-97	-60	-23	23	95	140	249	285
1 short call 11 A 1 year	35	30	29	16	10	-11	-27	-53	-86	-111
<b>Portfolio risk</b>	11	10	2	5	<b>-3</b>	2	-1	2	4	5

## 4. Risk with Active and Trader account

DEGIRO has decided to allow 'trader' account holders more access to securities credit and greater availability for going short in shares. Going short in shares means that shares are sold which the client does not possess. Both the use of securities credit and going short in shares are explained in more detail below for the different accounts.

### 4.1 Credit facilities

For a client with a 'trader' account, the credit facility is fixed at 70% of the value of the shares and investment funds and 80% of the value of the bonds. This credit facility is in accordance with the guidelines laid down in the Financial Transactions Act (WFT).

An 'active' client also has the possibility of using the credit facility to buy securities. The collateral value is equal to that of a 'trader' account. The difference is that the possibilities for buying securities with credit are limited via the risk model. For this reason, the portfolio risk of an investment portfolio for an 'active' account will always be the same as, or higher than, the risk of a 'trader' account. The table below shows a portfolio for which the risk is fixed for both an 'active' and a 'trader' account.

Table 19: margin overview

Aegon NV	€800	Sector Financials
ING Group NV	€1,000	Sector Financials
Royal Dutch Shell A	€1,100.00	Sector Energy
<b>Value of Portfolio</b>	<b>€2,900.00</b>	

Account	Active	Trader	
Event risk	€550.00	€550.00	50% event risk of €1,100.00 (RDSA)
Net investment category risk	€580.00	€580.00	20% net risk of €2,900.00
Net sector risk	€540	€540	30% sector risk of €1,800
Gross investment category risk	€1,943.00	€203.00	67% / 7% gross risk of €2,900.00

<b>Portfolio risk</b>	<b>€1,943.00</b>	<b>€580.00</b>	<b>Risk based on net investment category</b>
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The above table makes it clear that the portfolio risk is higher for an 'active' client than for a 'trader' investment portfolio. The reason for this is to restrict the use of the credit facility for 'active' clients. In order to illustrate this, an insight into the maximum permissible financing of the above portfolio at DEGIRO is required. An example is presented in the table below.

<b>Margin review</b>	<b>Active Account</b>	<b>Trader Account</b>
Value of portfolio	€2,900.00	€2,900.00
Cash balance	€0.00	€0.00
Net liquidity value	€2,900.00	€2,900.00
Risk portfolio	€1,943.00	€580.00
<b>Margin (deficit/surplus)</b>	<b>€977.00</b>	<b>€2,320.00</b>

<b>Credit facilities</b>	<b>Active Account</b>	<b>Trader Account</b>
Collateral value	€2,030.00	€2,030.00
Cash balance	€0.00	€0.00
<b>Deficit/available</b>	<b>€2,030.00</b>	<b>€2,030.00</b>

For an 'active' client, the portfolio risk limits the credit possibilities. After all, the margin must be equal to or higher than the risk. In this example, an 'active' client can take out a securities credit of €977, which is consistent with 34% of the portfolio value. The margin surplus is €977 and restricts the client from making use of credit for more than this amount. In the example of a 'trader' client, the margin is not the limiting factor. In this case, the collateral value determines the credit possibilities for this portfolio. The maximum permissible credit is €2,030, which represents 70% of the value of the investment portfolio.

## 4.2 Short shares

For an 'active' client, the possibility of going short in shares is limited by using a risk weighting of 67% of the gross value of the shares. A 7% risk weighting generally applies to a 'trader' account for shares of this type of risk. This therefore substantially limits the possibilities for setting up a long-short strategy for an active client.