Chapter 4

Fit for certificates

After careful consideration, Bruno is disappointed to find that none of the training camps really convince him. Although he can imagine that training highly specialized players for a large team makes perfect sense, he is afraid that his small team could be overstretched by extreme specialization.
lose momentum. Bruno does not want to take this risk and therefore decides to create his own concept for a training camp with the support of Mr. Drill and Dr. Quant. It is important to him to train each player for more than just one position.

For investors, certificates are comparable to players that are specifically tailored to the needs of their portfolio and often generate attractive returns in different market phases. The big challenge is to select the certificates that best fit into a portfolio from the enormous number of different certificates available.

Since their introduction in 1989, certificates have become one of the most popular investment instruments in Germany. In the years 2002-2007 in particular, there was a real boom on the certificate market, with the market volume doubling every year.[189] This development was accompanied by an equally rapid increase in the number of different certificates, which ultimately amounted to more than 170,000 at the end of 2007.[190] But what actually distinguishes certificates as an investment instrument?

189) Derivatives Forum (2007).
190) Zertifikateweb (2008), Status 01/2008.

4.1 Basic mode of operation

When planning the training camp, Bruno first wants to find out about the basic design options with the help of Mr. Drill. Mr. Drill is enthusiastic about Bruno's idea and immediately tells him about a variety of procedures and training methods that he has learned from various training camps.
knows. Bruno listens to Mr. Drill with interest and diligently takes notes.

In this chapter, the investor learns how certificates work in principle. Selected examples are used to illustrate this. As Bruno is informed about the possibilities of structuring a training stock, the reader gains an insight into the many possibilities offered by certificates.

Certificates are derivatives tailored to private investors that can have a wide variety of payout profiles.[191] More precisely, they are bonds whose repayment depends on the price of a specific underlying.[192] As bonds, certificates are loans to the issuer. The issuer is completely free to decide for what purpose he uses the money made available to him. He is therefore not obliged to actually acquire the securities underlying a certain payout profile. Consequently, the holder of a certificate has no ownership rights - neither in the issuer's company nor in the underlying.

Unlike shares, bonds and real estate, certificates are not an asset class in their own right. Rather, they are a combination of different asset classes that are combined in one product. Similar to a fund, a certificate is a kind of shell within which different investments can be combined. Certificates should therefore be referred to as investment instruments or investment vehicles.

Figure 48 shows how certificates work. The investor buys a certificate from the issuer for 100 GE, which promises him a repayment equal to the price of the underlying at maturity. As this price rises to 120, the repayment from the certificate is 120 GE.

191) Kozubek, W.; Pfluger, B. (2007), p. 14.
192) Röhl, C. (2002), p. 25.

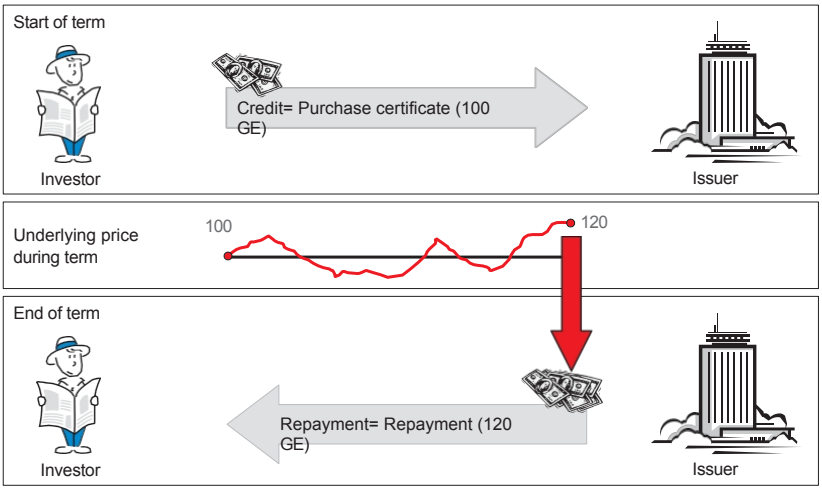

Figure 48: Basic functionality of certificates.

What is the advantage of a certificate for the issuer compared to a traditional bond, where the issuer would presumably have had to pay a significantly lower interest rate?

First of all, it must be noted that an issuer does not bet against the investor with regard to the performance of the underlying, but always hedges its risks accordingly.[193] If an issuer succeeds in carrying out this hedging at low cost, it receives loans from a certificate at significantly more favorable conditions than with traditional bonds.

In the case of certificates, the issuer also has the opportunity to generate profits via various cost items. If an issuer sells two certificates at the same time, for example, whose payout profiles are exactly opposite, this means a zero-risk transaction for the issuer that requires no hedging and incurs no hedging costs. In this way, the issuer receives a free loan. Additional profits arise for him even if he only charges low fees(194).

Another reason why an issuer might decide to issue a certificate instead of a traditional bond is the

193) Jordan, M. (2006), p. 13.

194) The case shown serves only as an . In practice, it will prove extremely difficult to find two buyers for the products described at the same time.

significantly simpler issuing processes. While the issue of a traditional bond is only possible at great expense in terms of time and money, certificates can be brought to the market very quickly and cost-effectively. One of the reasons for this is the legal framework provided by the legislator(195).

Based on this initial description, important certificate classes are now presented. Given the enormous variety of different products, this description cannot be exhaustive. It primarily serves to illustrate possible mechanisms in principle. If an investor is fit for certificates, he can transfer his knowledge to all payout profiles. They will then only pay secondary attention to the exact designation of a certificate(196).

Some experts are of the opinion that it is sufficient for an investor to know what will happen to a certificate investment at the end of the term.[197] This statement should be treated with caution. If an investor - for whatever reason - has to access the invested capital during the term of a certificate, this is always done at the current daily price. As this price can deviate greatly from the promised payout profile, it is important to understand at least the main features of how it is calculated and thus gain an approximate picture of the risk of the investment. For this reason, duplication possibilities (replication possibilities) are discussed for each certificate in addition to the general mode of operation. It is described which components can be used to replicate a specific payout profile and what effects this has in principle on the performance during the term. In addition, specific risks and costs of each certificate are pointed out. A general risk and cost analysis follows in sections 4.2.2 and 4.2.3.

195) Rettberg, U. (2007).

196) This means that the investor is independent of the exact designation of a certificate, which can differ significantly depending on the issuer.

197) See Jordan, M. (2006), p. 14.

Note Mr. Drill

The of the certificates traded on the market often differ greatly from the examples shown here. However, investors should not be unsettled by this, but should always pay attention to the exact description of the mechanism and the payout profile.

First, a brief overview of how investors can find out about the terms and conditions of individual certificates will be given in an excursus.

EXKURS: Sources of information on certificates

The topic of certificates is now on everyone's lips, with the result that interested investors are offered numerous sources of information. However, it is often not easy to correctly assess the reliability of individual pieces of information and distinguish between objective representations and clever marketing. The accuracy information is also usually not , especially in the case of electronic media. Before making an investment decision, investors should therefore a look at the issuer's binding product information. This includes:[198]

The Sales prospectus

The sales prospectus is an integral part of the business agreement between the investor and the issuer. It describes the individual features of a certificate in detail. It a great help in understanding the structure of more complex certificates in particular.

The factsheet

The factsheet is an abridged sales prospectus that the most important information about a certificate. In the case of standard certificates, the factsheet can used to obtain a quick overview of the structure.

198) Natter, A. (2007), p. 170 ff.

At this point, it should be pointed out once again that the underlying shown in the payout profiles does not pay out any dividends. The return results solely from the price performance. The payout profiles shown are only intended to illustrate how they work in principle. They are not based on actual products, which means that the level of the selected parameters (thresholds, bonuses, profits, etc.) may differ significantly current market practice.

4.1.1 Linear certificates

In 1989, Dresdner Bank issued the first linear certificate, and thus the first certificate ever, with an index certificate on the DAX.[199] Linear certificates are characterized by a linear payout profile. This means that they exactly reflect the price performance of the underlying. With linear certificates, the investor therefore participates almost 1:1 in both positive and negative movements in the underlying, as shown in Figure 49.[200] As the certificate was purchased at a slightly higher price than the underlying, there is no exact 1:1 participation.

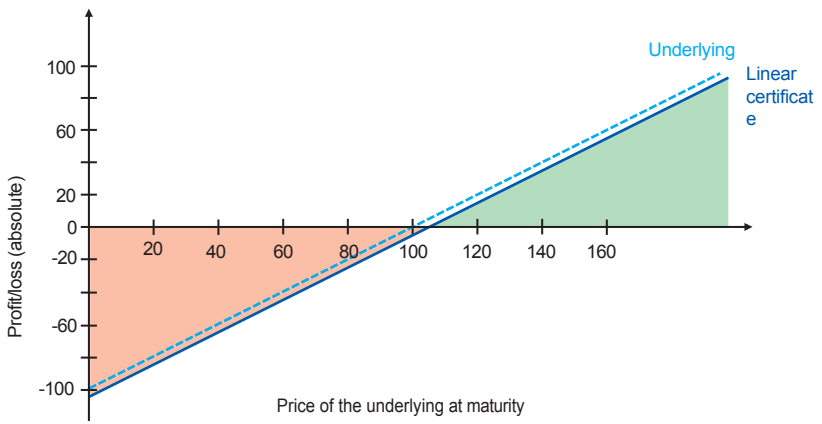

Figure 49: Payout profile of a linear certificate.

199) Harengel, J. Scheuble, S. (2006), p. 11.
200) Jordan, M. (2006), p. 15 ff.

Many linear certificates are issued without a limited term and are referred to as open-end certificates. In the case of open-end certificates, the issuer undertakes to redeem the certificate on certain key dates. The sales prospectuses often also provide for a special right of termination for the issuer on these dates.[201]

The respective underlying is decisive for the attractiveness of a linear certificate. It can either consist of a single value or be made up of a group of different values. Linear certificates are always particularly interesting when it is difficult to invest in the underlying itself. Two of the most important representatives of linear , basket certificates and index certificates, are presented below.

Basket certificates

Basket certificates are linear certificates whose underlying consists of a group (a basket) of different securities. The components of this basket can be freely selected by the issuer of the certificate and are compiled on the basis of certain criteria. If adjustments made on the basis of these criteria during the term of the certificate, these are also referred to as actively managed baskets.[202] Popular selection criteria for the underlying of basket certificates are: the sector, the asset class and the regional focus. For example, many issuers offer certificates on combinations of the highest-dividend stocks in an index.[203]

Linear certificates, which only relate to a single underlying asset, are a special form. These certificates are often found in the commodities sector and offer a simple investment opportunity for private investors. In the case of commodity certificates, an investor should obtain precise information about the underlying, as massive rollover effects can occur with this form of investment, which significantly reduce the return.

201) Szczesny, A., Weyand, H. (2005), p. 92.
202) Röhl, C. (2002), p. 141 f.
203) Szczesny, A., Weyand, H. (2005), p. 97 f.

EXCURSE: Rollover effects

While futures always a fixed term, there are a number of commodity certificates without a fixed term (open-end). The commodity future with the shortest remaining term often serves as the underlying for these open-end certificates. Shortly before the futures expire, they are then exchanged for the future with the next longest maturity. This step, known as "rolling", brings the investor either additional profits or additional losses. Two scenarios are possible:

1) **Contango:** The higher the futures price, the higher the Remaining term
2) **Backwardation:** The longer the remaining term [204], the lower the futures price.

In the case of contango, an investor incurs rolling losses because the expiring future has a lower price than the new future to be purchased. In the case of backwardation, roll profits can be achieved accordingly[205].

Index certificates

Index certificates are basket certificates whose underlying consists of an official stock market index. They often offer the investor significant cost advantages over other forms of investment, which is described using an equity index certificate:[206] As discussed in section 2.2.1, the composition of an equity index is not fixed, but changes over time. If an investor now invests in an index fund or directly in the shares represented in an index, he incurs transaction costs as a result of these adjustments. Such costs are not with an index certificate. To ensure that the transaction cost advantage is not paid for by forgoing dividends, investors should always make sure that their index certificate is based on a performance index. If this is the case, there is a further advantage: reinvestment of dividends is also free of charge.

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204) Backwardation is often observed with industrial metals such as copper. Here, investors are prepared to a premium (convenience yield) for the immediate availability of the raw material (see Wilhelm, L. (2007), p. 22).
205) Goldman Sachs (2006), p. 5 ff.
206) Winkler, D. (2006), p. 22 f.

Duplication

In principle, a linear certificate can be duplicated by purchasing the underlying. If the storage of the underlying is only possible with enormous effort, as is the case with commodities, the possibility of direct purchase is ruled out in practical implementation. Another alternative for replication is the purchase of derivatives such as futures or zero strike calls[207].

During the term

The price of a linear certificate is usually very close to the price of the underlying, even during the term. With linear certificates, investors can notice price deviations very quickly and exploit them to the disadvantage of the issuer. Assuming the price of a linear certificate is too high, existing investors will sell their holdings in order to generate an additional return. If prices are too low, arbitrage is possible by an investor buying the certificate and selling the underlying forward at the same time[208].

Special risks and costs

The main risk of linear certificates of the risks of the underlying and the default risk of the issuer. Before buying a certificate, investors should ensure that they understand how the underlying instrument is created and that they can understand its price. Some issuers sell linear certificates on indices they have developed themselves, which do not always have these characteristics[209].

Linear certificates are usually easily comprehensible and comparable products. Particularly in the case of standardized underlyings (such as indices), these certificates therefore generally have a favourable price.

In general, the costs of linear certificates lie in the waiver of dividends and in the spread between the bid and ask price calculated by the issuer. In addition, management and performance fees may be incurred, particularly for active basket certificates. Whether these costs are justified by a corresponding management service must be decided on a case-by-case basis.

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207) Tolle, S., et al. (2006), p. 93 f.

208) Strictly speaking, this transaction is not arbitrage, as the profits made are not risk-free due to the issuer's counterparty risk.

209) Straub, M. (2006), p. 58 f.

Note Mr. Drill

When deciding to invest in a linear certificate, the exact composition of the underlying is the most important parameter. The extent to which dividend payments are foregone should not be underestimated.

4.1.2 Guarantee certificates

Since their introduction in 2000, guarantee certificates have become by far the most popular class of certificates.[210] After investors paid almost no attention to risks during the boom years of the "new economy", an extremely high need for security arose after the stock market crash of 2001/2002, which led to a very strong increase in demand for guarantee certificates.[211]

Guarantee certificates promise the investor a certain "guaranteed minimum redemption amount" at the end of the term and thus a loss limitation. In contrast to an actual guarantee, however, this promise only applies if the issuer remains solvent. The minimum redemption amount of a guarantee certificate is granted irrespective of the performance of the underlying. In addition to the "guaranteed payment", an investor has the opportunity to participate positively in price changes of the underlying and thus generate an attractive return.[212]

Note Mr. Drill

Contrary to their name, guarantee certificates do not offer investors a complete capital guarantee, as the guarantee promise only applies if the issuer is solvent.

210) Schneider, S.; Winkler, D. (2005), p. 13.
211) Kozubek, W.; Pfluger, B. (2007), p. 24.
212) Jordan. M. (2006), p. 51 f.

There is a very wide range of product variations in the design of guarantee certificates. Differences exist particularly in the type of underlying, the term, the guaranteed minimum repayment, the participation rate and the type of participation. The numerous design options mean that it is difficult to compare products from different issuers, especially in the case of guarantee certificates.[213] A meaningful subdivision of this certificate class can only be made with a very low level of detail, as shown below.

Participation guarantee certificates

Participation guarantee certificates enable investors to participate directly in the price performance of an underlying. The amount of this participation depends on the participation rate, which indicates what proportion of the price performance of the underlying is tracked by the certificate. A 1:1 participation, as in the case of linear certificates, corresponds to a participation rate of 100%. In the case of guarantee certificates, however, this value is usually lower.[214] Figure 50 shows the payout profile of a participation guarantee certificate that guarantees a minimum redemption amount of 100% and allows the investor to participate in a positive performance of the underlying with a participation rate of 50%. The low participation rate is shown graphically by the flat slope of the repayment function in the right half of the chart.

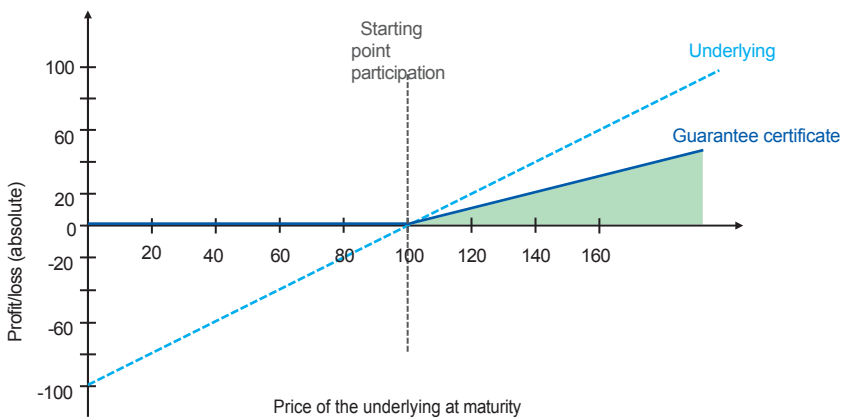

Figure 50: Payout profile of a participation guarantee certificate.

213) Schmidt, S. (2005), p. 98 f.
214) Röhl, C. (2002), p. 316.

Expression. Assuming the price of the underlying rises from 100 to 140, the holder of the certificate only makes a profit of 20 GE. However, if the price of the underlying falls compared to its initial value of 100, the repayment from the certificate is always 100 GE.

Bonus guarantee certificates

In contrast to participation guarantee certificates, bonus guarantee certificates do not participate directly in the price movements of the underlying. Instead, this type of certificate gives the investor the opportunity to receive payment of a predetermined bonus amount in the form of bonus interest. If the price of the underlying is above a certain threshold (bonus threshold) on one or more key dates, the bonus interest is paid out. The extent to which the threshold is exceeded has no effect on the amount of the payment. The bonus guarantee certificate shown in Figure 51 offers the investor a basic interest rate of 4% and has only one valuation date at the end of the term. If the value of the underlying is above 120 on the redemption date, a bonus interest of 6% is paid to the investor in addition to the basic interest rate.

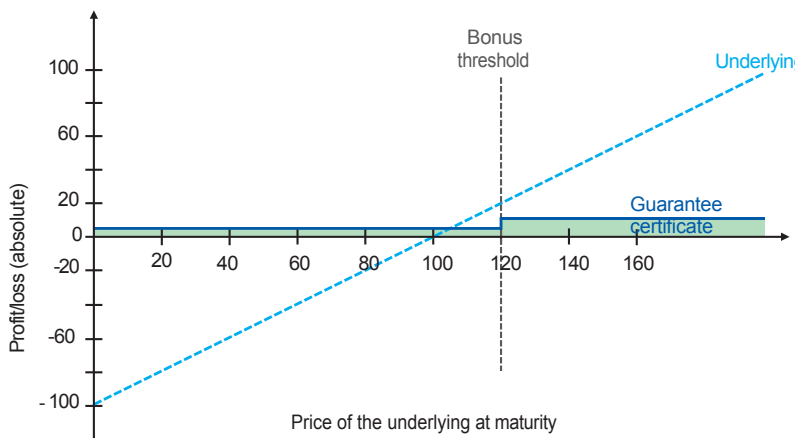

Figure 51: Payout profile of a bonus guarantee certificate.

Duplication

It is generally very easy to replicate a guarantee certificate. All that is usually required is a zero-coupon bond from the issuer and a corresponding option on the desired underlying. A zero-coupon bond has the characteristic that it can be purchased at a price below 100% of the nominal value and that repayment is made in the amount of the full nominal value.[215] The capital not invested in the zero-coupon bond can then be used to purchase options on the underlying and, with the support of the leverage effect, participation in its price performance.[216] Here is an example:

A DZ Bank zero-coupon bond maturing in one year is quoted at 95.65%. If an investor now wants to replicate a DZ Bank guarantee certificate with a one-year term and capital protection of 100% for 1000 euros, he can use this bond and invest 956.50 euros in it. The credit risk of the bond corresponds exactly to the counterparty risk of the certificate. In one year, the bond is repaid at 100%, i.e. EUR 1000, which corresponds to the minimum repayment amount of the certificate. The uninvested amount of EUR 43.50 (EUR 1000-956.50) can be invested in call options on share A to participate in its price performance. If the current price of share A is EUR 100 and the price of a call (with a strike of 100) on this share is EUR 8.70, the investor can purchase 5 calls at a price of EUR 43.50. This completes the price development of the share. In this way, he follows the price development of 5 shares with a total value of EUR 500. Measured against his total investment of EUR 1000, this corresponds to a participation rate of 50%.

If the value of share A is below EUR 100 at maturity,
the call expires worthless and the investor receives the repayment from the zero-coupon bond. Figure 52 shows the duplication just described again graphically. As the amount of the repayment from the call is completely uncertain, it has been labeled "+X".

215) See chapter 1.2.2.
216) Winkler, D. (2006), p. 50 f.

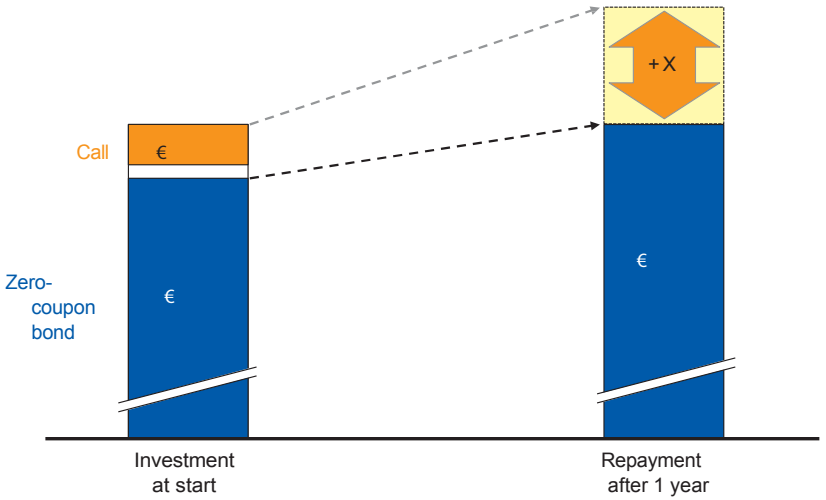

Figure 52: Reproduction of a guarantee certificate.

If, in addition to a capital guarantee, an investor would also like to receive a certain minimum return on his invested capital, he can achieve this by investing more in the zero-coupon bond. As less capital is then available for the purchase of call options, the participation rate decreases at the same time. A lower capital guarantee is achieved accordingly by investing less in the zero-coupon bond and enables greater participation.

Tip Mr. Drill

The duplication of guarantee certificates is sometimes also very easy for private investors and can bring significant cost advantages compared to a certificate investment.

During the term

With guarantee certificates, investors should always be aware that the promised "capital guarantee" only applies at maturity. Up to this point, the price of a guarantee certificate can sometimes deviate very significantly from its payout profile and may well fall below the guaranteed price.

[217] Depending on the individual components, a fall in the value of the zero-coupon bond and a fall in the value of the call may be responsible for such a fall in price.

A zero-coupon bond always loses value if the general interest rate level rises or the issuer's credit rating deteriorates. The value of a call decreases particularly in situations in which a decline in the price or volatility of the underlying can observed.

Special risks and costs

One of the greatest risks of guarantee certificates is that the promised capital guarantee misinterpreted as an actual guarantee. In principle, guarantee certificates are also bonds, which are always subject to a default risk. A capital guarantee can therefore only be maintained as long as the issuer remains solvent. A further problem in connection with the guarantee promise is that it always relates to the original issue price of the certificate. If an investor decides to purchase a guarantee certificate during its term, the capital guarantee may be significantly reduced if the purchase price is higher than the original issue price.

One of the special costs of a guarantee certificate is that the investor forgoes interest income. The entire capital invested in a guarantee certificate is subject to the issuer's default risk and should therefore generate at least the same return as a comparable corporate bond. If only the capital invested is repaid at the end of the term, the lost interest income must be interpreted as a loss.

4.1.3 Discount certificates

In contrast to guarantee certificates, which allow very flexible loss limitation, discount certificates have a profit limitation. This feature may not sound very attractive at first, but together with the other features of a discount certificate, it results in a very interesting payout profile.

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217) Jordan, M. (2006), p. 51.

Discount certificates have been available on the market since 1995.[218] They give investors the opportunity to invest in the underlying at a reduced price and thus create a risk buffer against price losses compared to a direct investment. Reduced price in this context means that the price of the discount certificate is below the market price of the underlying. The investor nevertheless participates fully in the price movements of the underlying within a certain range. The risk buffer is financed by the profit restriction, among other things. The profit limit is referred to as the cap. Above the cap, there is no further participation in price increases of the underlying.[219]

Figure 53 shows the payout profile of a typical discount certificate that offers the investor a discount of 10% and allows him to participate in a positive performance of the underlying up to a price increase of 20%. The certificate can therefore be purchased for 90 GE, offers a maximum gain of 30 GE and a maximum return of 33.3%(220).

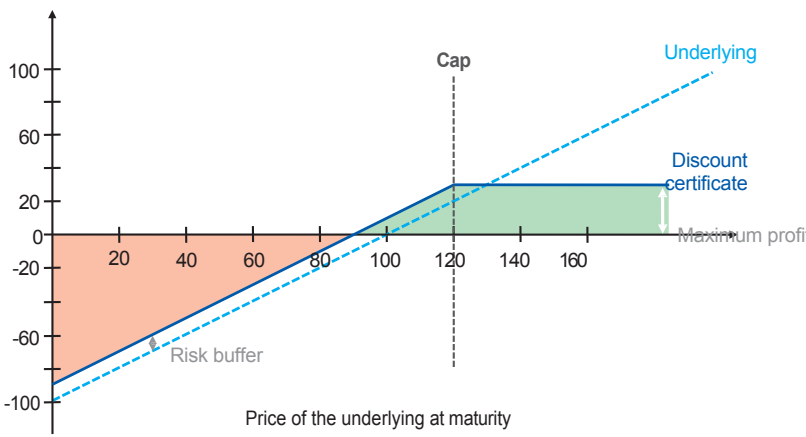

Figure 53: Payout profile of a discount certificate.

If the value of the underlying falls to zero, this also means a total loss of -100% for the holder of a discount certificate. Since in comparison

218) Schneider, S.; Winkler, D. (2005), p. 13.
219) Rittberg, B. (2000), p. 62 ff.
220) The discount certificate is purchased at an amount of 100-(100- 10%)= 90 and the max. The maximum return is therefore 120%. $\frac{120-90}{90} \cdot 100 = 33.3\%$.

However, since less capital had to be invested compared to a direct investment, the loss of the certificate is lower in absolute terms. In Figure 53, the maximum loss corresponds to the intersection of the vertical axis with the blue redemption function. The horizontal axis is also intersected by the redemption function at a value shifted by the 10% discount. Consequently, losses from the discount certificate only occur when the underlying falls below the value of 90 and thus by more than 10%. The absolute maximum gain corresponds to the distance between the horizontal axis and the horizontal part of the payout function.

Note Mr. Drill

In terms of diversification, profit limits in exchange for a limited risk buffer should be viewed very critically, as they prevent the balancing of very positive and very negative returns[218].

Discount certificates have a similar payout profile to short positions in put options and essentially differ from these in that they have a higher option premium and are less sensitive to the factors influencing the option price. Analogous to options, a distinction is also made for discount certificates between the states "in the money", "at the money" and "out of the money".[222] The exact distinction is summarized in Table 10.

Condition	Condition
In the money	Underlying price> Cap
On the money	Underlying price= Cap
From the money	Underlying price< Cap

Table 10: Conditions for discount certificates.

221) Böschen, M. (2007).
222) Layes, G.; Beck, A. (2005), p. 6.

Numerous special forms of discount certificates have , which are designated differently by the issuers. Three of these special forms - deep discount certificates, rolling discount certificates and reverse convertibles - are described in more detail below.

Deep discount certificates

In the case of discount certificates, the level of the discount and the level of the cap are very closely linked. A high discount usually results in a low cap, while a low discount results a high cap.[223] Deep discount certificates are characterized by the fact that they are far (deep) "in the money" and therefore have a low cap, which is below the current price of the underlying. In return, deep discount certificates offer the investor a high discount that protects against price losses.[224] Figure 54 shows the typical payout profile of a deep discount certificate. This can be purchased at a price of 60 GE and has a cap of 65. The current price of the underlying is 100. The discount granted is 40%, resulting in a return of 8.3% if the underlying does not lose more than 40% in value[225].

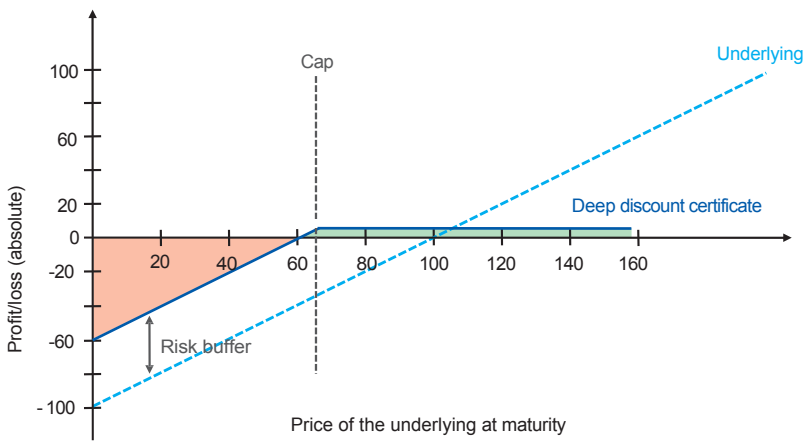

Figure 54: Payout profile of a deep discount certificate.

223) Natter, A. (2007), p. 80.
224) Jordan, M. (2006), p. 27 ff.
225) The deep discount certificate is purchased at an amount of 100 - (100 - 40%) = 60 and the maximum redemption is 65. The maximum return is $\frac{65-60}{60} \cdot 100 = 8,3\%$.

When an investor buys a deep discount certificate, he secures a fixed return, which he will most likely receive. Their investment is therefore very similar to a traditional bond investment.[226] Compared to bonds, however, deep discount certificates a higher risk, as their repayment is also jeopardized by a possible price collapse (crash) of the underlying in addition to the counterparty risk.

Tip Mr. Drill

As deep discount certificates have a higher risk compared to traditional bonds, they should also have a correspondingly higher yield. A comparison can be worthwhile here.

Rolling discount certificates

The limited term of discount certificates was often perceived by investors as a serious disadvantage. Long-term investment strategies were very difficult to implement with discount certificates, as a follow-up investment with similar characteristics had to be found at the end of each certificate's term. In addition to the administrative effort involved, such reallocations were also associated with transaction costs.

To overcome this problem, issuers have developed so-called rolling discount certificates, which no maturity limit. With rolling discount certificates, an investor technically invests in a classic discount certificate with a short remaining term. When this first discount certificate reaches maturity, the issuer immediately reinvests the distributed capital in a new discount certificate on the same underlying. The features of this second discount certificate largely correspond to those of the first certificate.[227] The main difference between two successive discount certificates is the level of the cap or discount. These are adjusted depending on the current market conditions. If

226) Hoffleit, A. (2004), p. 85 f.

227) The remaining term of the individual certificates in a rolling discount certificate is usually one month.

If the underlying rises sharply, this results in an increase in the cap for the new discount certificate. The transition from one certificate to the next is free of charge for the investor[228, 229].

Reverse convertibles

Reverse convertibles offer the investor an identical payout profile to discount certificates, although they are offered by issuers as a separate certificate class.[230] Reverse convertibles are bonds that promise the investor an interest rate that is significantly higher than the market rate. At the end of the term, however, the issuer has the option of returning the initial investment in the form of cash or shares.

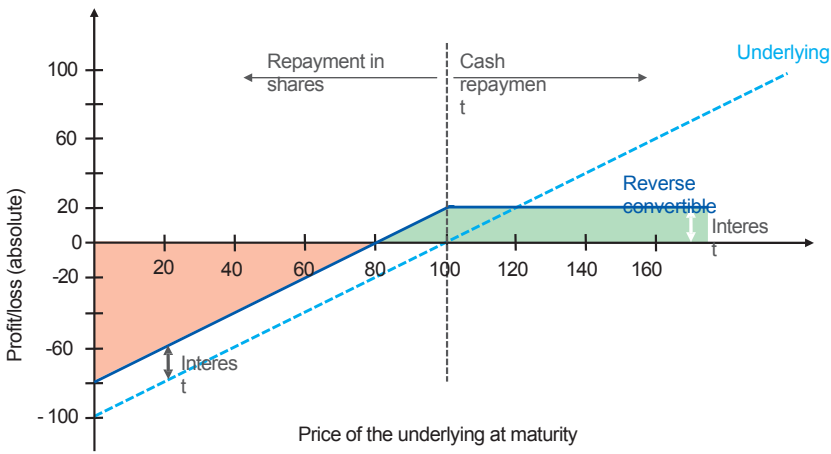

Figure 55: Payout profile of a reverse convertible.

to be paid in cash. If the price of the underlying share has risen, the issuer opts for a cash redemption. If, on the other hand, the price falls, the redemption takes place in the form of shares.[231] In effect, the investor participates in price losses of the underlying, while being denied price gains. If the high interest payments are included in this consideration, it becomes clear that they make up the profit for the investor when the price of the underlying rises and at the same time provide a kind of buffer in the event of a fall in the price of the underlying.

228) Winkler, D. (2006), p. 38 f.
229) Cf. performance of rolling discount certificates: Layes, G.; Beck, A. (2005), p. 11 ff.
230) Wilkens, M.; Scholz, H. (2000), p. 171 ff.
231) Rittberg, B. (2000), p. 10.

falling prices. This results in the exact payout profile of a discount certificate.[232] Figure 55 shows the payout profile of an equity bond with an interest rate of 20%.

Duplication

A discount certificate can be replicated in various ways. The simplest way is to buy the underlying and sell a call on it at the same time. The option premium received from the sale of the call results in the discount on the purchase price of the underlying.[(233)] The combination of buying the underlying and selling a call is shown in Figure 56.[234]

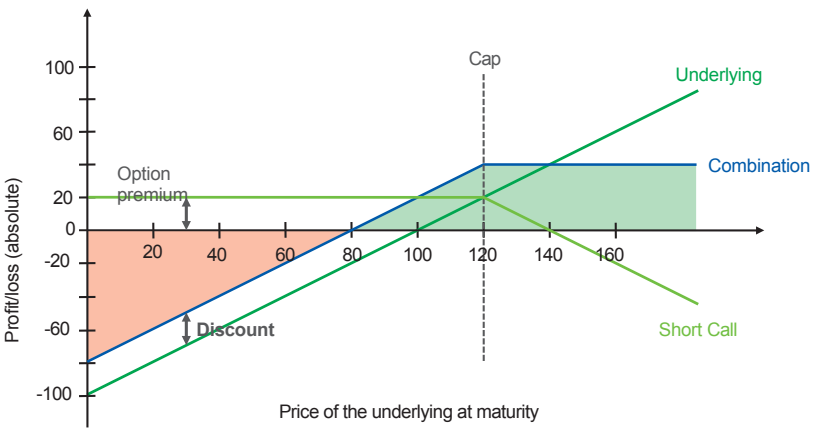

Figure 56: Replication of a discount certificate.

During the term

Since a discount certificate consists of a long position in the underlying and a short call, these two components are also responsible for price formation during the term. A short call gains in value if either the price of the underlying or its volatility

232) The "discount" of a reverse convertible results from a refund in the form of high interest at maturity. With discount certificates, on the other hand, the discount is deducted from the purchase price at the time of purchase and therefore corresponds to the value of the interest payments at the start of the certificate.

233) Tolle, S., et al. (2006), p. 105.

234) Another way of replicating this is to buy a zero-coupon bond and sell a put on the underlying at the same time (see Hoffleit, A. (2004), p. 82 f.).

fall, i.e. when a long call loses value. A decreasing remaining term also has a positive effect on the value of such a short call.

If the underlying of a discount certificate rises, this price movement is not tracked 1:1 by the certificate, even below the cap. The reason for this is the simultaneous decline in the value of the short call position.

Special risks and costs

There is always a risk with discount certificates if the underlying sharply. If, for example, price falls sharply, the often very small discount offers insufficient protection against losses. If the price of the underlying rises sharply, the investor runs the risk of not or only partially participating in this.

Discount certificates now belong to the group of standard products on the certificate market. Their costs are generally relatively low.[235] Similar discount certificates are offered by many issuers, making them easy for investors to compare. The dividends retained on a discount certificate are largely used to further increase the discount.

4.1.4 Leverage certificates

Since 2001, so-called leverage certificates have been available to investors. The term "leverage certificates" is very broad and expresses the fact that these certificates enable disproportionately high participation in price movements of the underlying compared to linear certificates.[236] This means that an investor can generate attractive returns with leverage certificates even if the underlying only moves very little.

Leverage certificates can be found on the market in a wide variety of forms. Their best-known representatives include *outperformance certificates* and *sprint certificates*. These two types of certificate are characterized by the fact that their leverage only works on price gains. If the price of the underlying falls compared to its initial value, the price loss is therefore similar to that of a direct investment[237].

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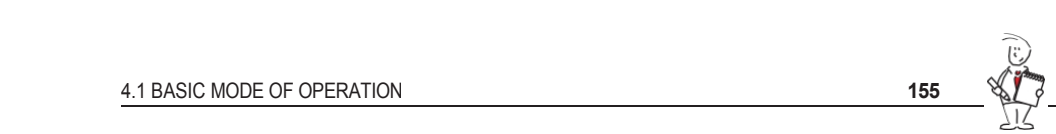
235) Baule, R.; Rühling, R.; Scholz, H. (2004), p. 828 ff.
236) Scholz, H.; Ammann, K.; Baule, R. (2003), p. 36.
237) Schmidt, S. (2005), p. 165 and p. 178.



Outperformance certificates

Outperformance certificates enable an investor to participate to a greater extent in a very positive performance of the underlying. To this end, price increases are hedged once a certain threshold is reached. If the price rises sharply, the certificate increases in value disproportionately. The leverage is financed by issuing the certificate above the price of the underlying.[238] Figure 57 shows the payout profile of an outperformance certificate with a 1.5-fold leverage, which applies once a barrier of 120 is reached. The certificate was issued at a price of 105, which was above the price of the underlying.

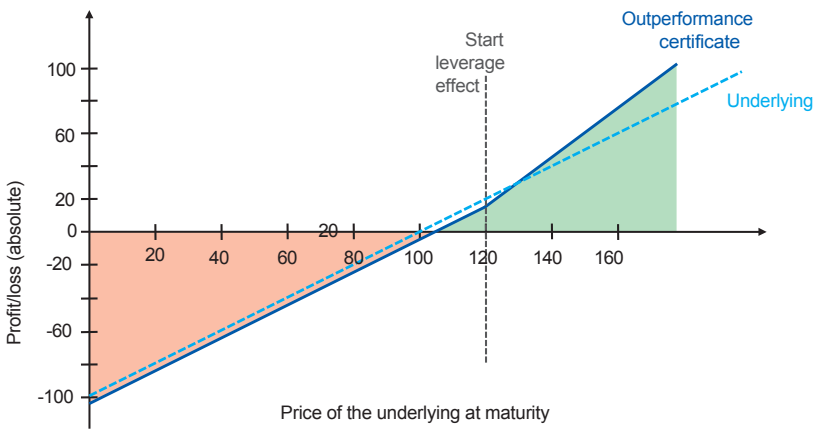


Figure 57: Payout profile of an outperformance certificate.

Sprint certificates

Sprint certificates work on a similar principle to outperformance certificates, but unlike outperformance certificates, they have a cap that limits the potential gains. The cap means that sprint certificates have more funds to finance the leverage. This means that a lower price of the certificate, an earlier start of the leverage or a higher leverage are possible.[239] Figure 58 shows the payout profile of a sprint certificate with a cap of 130. The investor participates in price increases with a factor of 2 until this limit is reached.

238) Szczesny, A., Weyand, H. (2005), p. 132 ff.
239) Szczesny, A., Weyand, H. (2005), p. 134 f.

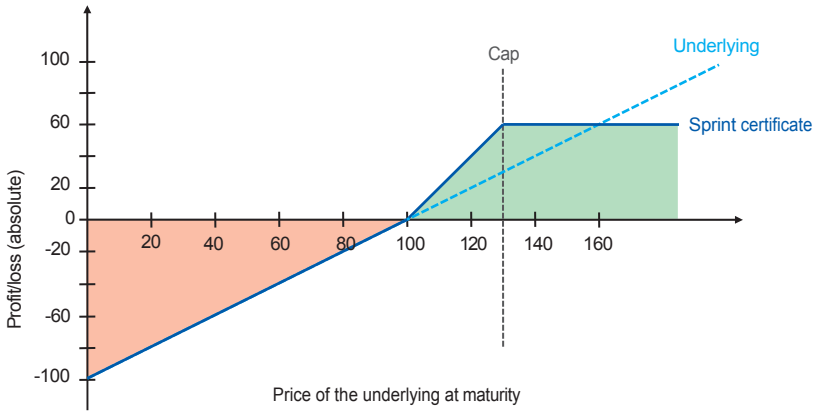


Figure 58: Payout profile of a Sprint certificate.

Duplication

In principle, outperformance certificates and sprint certificates can be replicated in such a way that an investor combines several identical calls on an underlying.[240] For example, an outperformance certificate with a leverage of three can duplicated by buying the underlying in conjunction with two call options. If an investor is prepared to limit potential gains upwards by means of a cap, he can achieve this by selling corresponding call options whose strike corresponds to the cap. The proceeds in the form of the option premium can then be used to finance the leverage. In the case of the certificate shown in Figure 58, for example, calls with a strike of 130 were sold and purchased at a price that corresponded exactly to the price of the underlying at the start.

During the term

Depending on the individual structure of a leverage certificate, different factors are responsible for its price during its term. In general, however, it can be said that leverage certificates react more strongly to changes in volatility than other certificates due to their high proportion of options.

Price changes in the underlying always lead to strong price fluctuations in a leverage certificate if they occur in the leveraged area. It should be noted that the leverage has an effect both on price gains and price losses.

240) Szczesny, A., Weyand, H. (2005), p. 135.

Special risks and costs

If leverage certificates are purchased at a time when the price of the underlying is not yet in the leveraged area, their potential for loss is similar to that of a direct investment. However, there is always a significantly increased risk when the price of the underlying is in the leveraged area. In this case, the certificate amplifies both price rises and price falls, meaning that even small movements in the underlying can lead to large losses[241].

The costs of leverage certificates are usually difficult to understand as they depend very much on the price of the options used. In addition, issuers offer very differently structured products, meaning that cost comparisons are only possible to a limited extent.

Note Mr. Drill

In principle, leverage certificates do not amplify price losses. However, if a certificate is purchased during its term, it will leverage losses whenever the price of the underlying is within the leveraged range.

4.1.5 Bonus certificates

Although bonus certificates have only existed since 2003, they have since become one of the best-known classes of certificates.[242]) Similar to discount certificates, they enable investors to generate attractive returns even in stagnating markets. This is by paying a fixed amount (bonus amount) if two conditions are met:

1) During the entire term of the certificate, the price of the underlying is quoted above a certain limit (safety threshold).
2) At the end of the term, the price of the underlying is below the bonus amount (bonus threshold).

241) Schmidt, S. (2005), p. 171 f.
242) Schneider, S.; Winkler, D. (2005), p. 13.

If one of these conditions is not met, any claim to payment of the bonus amount expires. If the price falls below the safety threshold during the term of the certificate, the redemption of the bonus certificate at the end will correspond exactly to the price of the underlying(243).

How high the redemption amount is if the second condition is not met, i.e. if the price of the underlying is above the bonus threshold at maturity, depends on whether it is a classic bonus certificate or a bonus certificate with a cap.

Classic bonus certificates

Classic bonus certificates are linear certificates that offer the investor an additional bonus mechanism in a certain range. If one of the two conditions for payment of the bonus is not met, a classic bonus certificate is transformed into a linear certificate that allows the investor to participate almost 1:1 in the performance of the underlying. In the case of low-dividend underlyings, the bonus mechanism is financed by the fact that the value of the certificate is higher than the value of the underlying.[244] Figure 59 shows the payout profile of a classic bonus certificate in the event that the safety threshold is not met during a period of time.

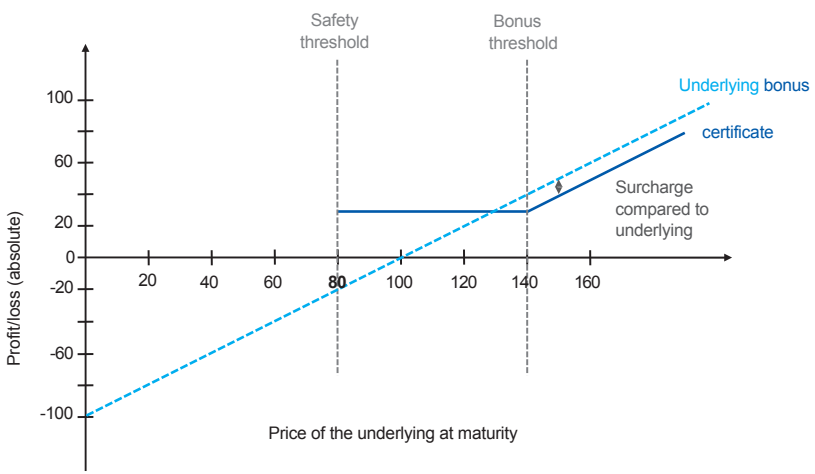


Figure 59: Payout profile of a classic bonus certificate without touching or falling below the safety threshold during the term.

243) Jordan, M. (2006), p. 35 ff.
244) Szczesny, A., Weyand, H. (2005), p. 128 ff.

was not touched or undercut during the term. The bonus certificate shown was purchased at the beginning of the term at a price of 110 GE, i.e. 10 GE above the price of the underlying. This purchase price corresponds to the distance (above the bonus threshold) between the repayment function of the bonus certificate and that of the underlying. If the price of the underlying is below the bonus threshold at the end of the term, the investor receives a fixed bonus payment of 140 GE. After deducting the invested capital of 110 GE, the investor receives a profit of 30 GE. If the price of the underlying is above the bonus threshold of 140 at the end of the term, the investor participates fully in this development and makes a correspondingly higher profit than in the case of the bonus payment.

Bonus certificates with cap

In terms of their basic structure, bonus certificates with a cap are linear certificates that have a cap and an additional bonus mechanism. If one of the conditions for the bonus payment is not met, the bonus mechanism expires, while the cap remains in place. The cap gives the issuer greater scope for financing, resulting in a lower price and a lower safety threshold for the issuer.

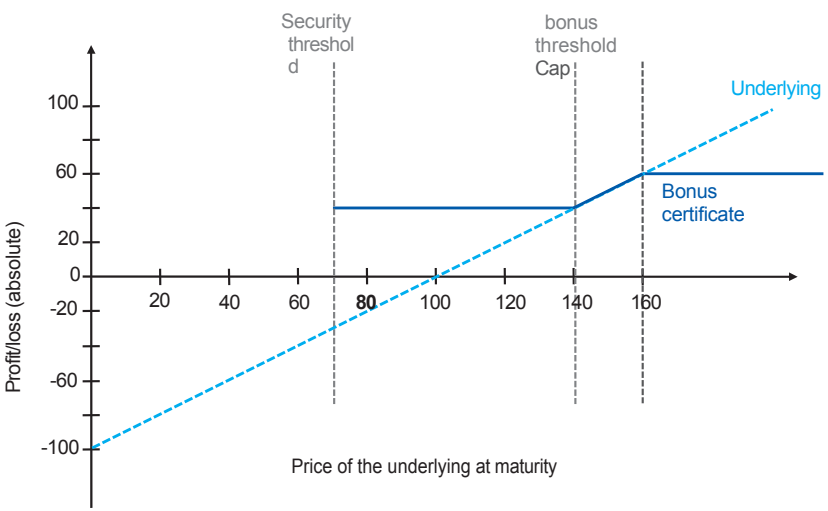


Figure 60: Payout profile of a bonus certificate with cap without touching or falling below the safety threshold during the term.

certificate.[245] Figure 60 shows the payout profile of a bonus certificate with a cap whose safety threshold was not touched or undershot during the term. If the price of the underlying is above the bonus threshold at maturity, the investor participates in this development until the cap is reached. The safety threshold is now lower than in Figure 59 and the certificate was purchased at a price that exactly matched the price of the underlying at the start.

Note Mr. Drill

The payout profile of bonus certificates only applies if the price does not fall below the safety threshold during the entire term. The redemption of the certificate is therefore not only determined by the price of the underlying at maturity.

Duplication

Classic bonus certificates can be replicated by purchasing the underlying and a down-and-out put.[246] A down-and-out put is an exotic put option that expires worthless as soon as the underlying touches or falls below a certain threshold.(247) If a bonus certificate with a cap is to be replicated, a corresponding short call on the underlying must be added to the two components of a classic bonus certificate. The resulting option premium is then also available to finance the certificate.[248]

It is not usually possible for private investors to duplicate a bonus certificate as they do not have access to exotic options. Nevertheless, the specific replication of the bonus certificates shown will be described briefly.

To replicate the bonus certificate shown in Figure 59, an investor needs the underlying with a value of 100 GE as well as a down-and-out put with a strike of 140 and a knock-out threshold of
80 The down-and-out put always has a positive value if

245) Goldman Sachs (2007) b, p. 22 ff.
246) Tolle, S., et al. (2006), p. 101.
247) Braddock, J. C. (1997), p. 96 f.
248) Goldman Sachs (2007) b, p. 23 f.

the price of the underlying is quoted below 140 and the knock-out threshold of 80 has not been touched or fallen below. In the area between the safety threshold and the bonus threshold, the positive value of the down-and-out put is then added to the value of the underlying, resulting in the fixed bonus payment. If the knock-out threshold is touched or undershot during the term, the down-and-out put expires and with it the bonus mechanism. To acquire the down-and-out put, the investor must pay an option premium. In the case shown, this amounts to GE 10, which together with the underlying results in an investment sum of GE 110.

The bonus certificate shown in Figure 60 is based on the underlying with a value of 100 GE, a down-and-out put with a strike of 140 and a knock-out threshold of 70 as well as a short call with a strike of 160. The option premium received from the short call corresponds exactly to the option premium that the investor has to pay for the down-and-out put, resulting in a total investment of 100 GE for the purchase of the underlying.

During the term

The value of bonus certificates is very difficult to determine during the term, as exotic options have a special price behavior. As a general rule, an increase in volatility leads to a fall in the price of the down-and-out put, as the probability of a total loss (due to a knock-out) increases.[249] It can also be stated that the price of a bonus certificate always fluctuates sharply when the price of the underlying is close to the threshold of the down-and-out put.

Special risks and costs

Bonus certificates have a high risk if the price of the underlying is very volatile and therefore subject to high fluctuations. This increases the probability that the price will fall below the safety threshold during the term and the bonus mechanism will expire.

As already mentioned, the price of bonus certificates is difficult for private investors to understand. However, the main cost blocks of these certificates are generally a higher price than a direct investment in the underlying and the waiver of dividends.

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249) UBS (2007), P. 29.

4.1.6 Express certificates

While the certificates presented so far all have a fixed term, express certificates can be redeemed before the end of the term. Similar to bonus certificates, express certificates also have various limits. The amount and time of redemption are determined by the price performance of the underlying in relation to these barriers.

The first express certificate was issued at the end of 2003.[250] There are now an enormous number of different products that belong to this class of certificate. In order to understand the basic principle of such an express certificate, however, only the classic form will be described here.

In the case of a classic express certificate, the price of the underlying is fixed at the beginning of the term and is referred to as the reference price. In addition, a safety threshold below the reference price is defined. The current price of the underlying is then compared with the reference price on annual reference dates.

If the price of the underlying is above the reference price on the first reference date, the express certificate is repaid immediately and the investor receives an attractive interest payment. If the price of the underlying is below the reference price, the term of the certificate is extended by a further year.

At the end of the second year, the same test is carried out again. If the price of the underlying is higher than the reference price, the investor receives double the interest as in the first year when the express certificate is redeemed. If the price is below the reference price, the term of the certificate is extended again by one year. This procedure is repeated until the certificate is redeemed or until its maximum term is reached.

If an express certificate not repaid by the end of the specified maximum term, the safety threshold comes into play. If the price of the underlying is above this threshold, the investor gets back the capital invested. If the underlying is quoted below the safety threshold, the investor participates fully in the resulting price losses[251].

250) Weithofer, M. (2007), p. 6.
251) Goldman Sachs (2007) b, p. 47 ff.

Note Mr. Drill

Due to the relatively long maximum term of many express certificates, the investor suffers a high loss if only the capital invested is paid out at the end or even falls below the safety threshold and he does not receive any interest payments.

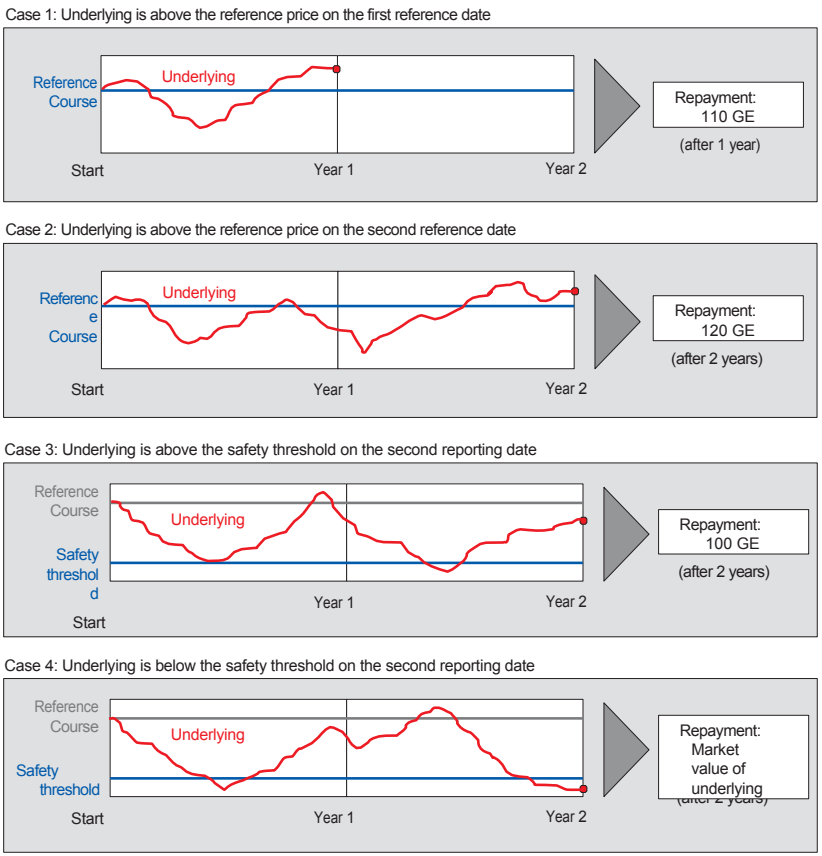

Figure 61: Redemption of an express certificate.

Figure 61 illustrates the possible payouts of an express certificate with a reference price of 100 and a maximum term of two years. If the price of the underlying exceeds the reference price, the invested capital plus interest of 10% is paid out.

or 20% (case 1 and case 2). If the price of the underlying is not above the reference price on any key date, the safety threshold must be observed: If it is exceeded, a fixed payment of 100 GE is made (case 3). Otherwise, the investor participates fully in the price losses incurred (case 4).

The presentation of payout profiles is not useful for express certificates, as too many different outcomes are possible. Even in the simple case of two key dates, there can be four different repayments. If there are more than two cut-off dates, express certificates can be represented very well by so-called expiry diagrams.[252] If the express certificate just described had a maximum term of four years, it could be clearly described by the expiry diagram shown in Figure 62.

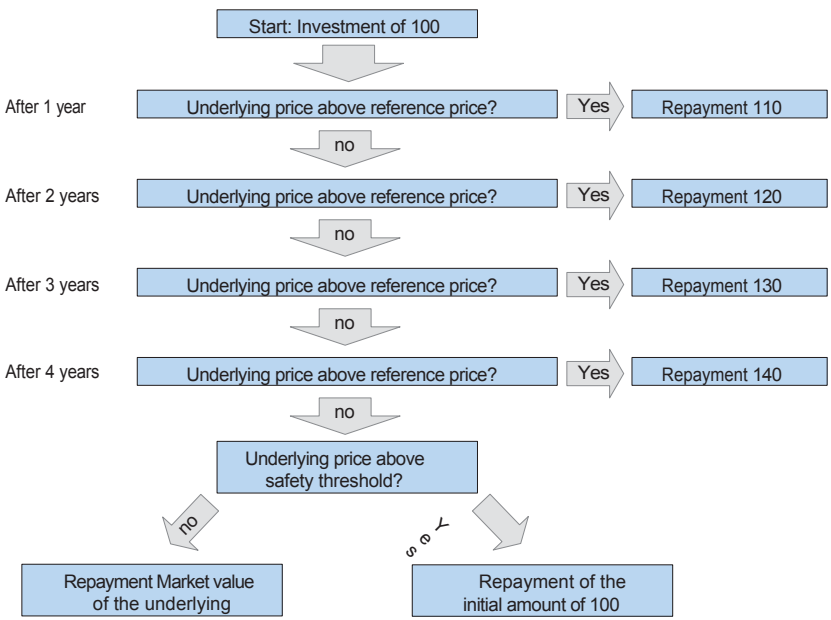

Figure 62: Flow chart of an express certificate.

252) Certificates Forum Austria (2007), p. 21.

While in the case of classic express certificates, falling below the safety threshold between the cut-off dates has no effect on the redemption amount, there are many products on the market where this threshold may not be touched or fallen below during the entire term. Investors are advised to pay particular attention to the precise definition of the thresholds when selecting a suitable express certificate.

Duplication:

The replication of express certificates is somewhat more complex and can only be carried out using various exotic options. An important component of these certificates are digital options with multiple exercise dates, whose behavior differs significantly from traditional options.[253]) A more detailed description is not provided here.

During the term

As the price of express certificates is highly dependent on the performance of exotic options, it is difficult to predict. Generally, large fluctuations in the price of the certificate can always be expected if the price of the underlying close to one of the relevant barriers shortly before a key date. It should be noted that the percentage value of the distributed interest payments decreases with increasing maturity. In the case of an express certificate that is repaid either after one year at 110 GE or after two years at 120 GE, the percentage return falls from 10% in the first year to 9.5% in the second year due to the compound interest effect.

Special risks and costs

The danger of express certificates is that the promised loss buffer only takes effect if the price of the underlying falls slightly. If the price falls sharply, the owner of an express certificate bears the full price losses. At the same time, the potential gains of an express certificate are severely capped.

Express certificates are difficult to understand in terms of their costs. If express certificates are issued on underlyings with high dividends, it may be worthwhile for a private investor to compare this dividend with

253) Options with multiple exercise dates are also referred to as Bermuda options.

the possible maximum profits of the express certificate. If there is only a small difference here, a direct investment may be the better investment alternative due to its unlimited profit opportunities.

4.2 General properties of certificates

Armed with a list of different ideas, Bruno now seeks the advice of Dr. Quant, who is supposed to check the pros and cons of the individually designed training camp once again. Dr. Quant puts the brakes on Bruno's euphoria and points out to him in particular that the planned

The idea of specifically training individual players also entails high costs and risks. He advises Bruno to weigh up every idea carefully to see whether it will actually lead to the goal.

Similar to the information Bruno receives from Dr. Quant, the investor is informed about the general advantages and disadvantages of certificates. This knowledge is an important prerequisite for determining the suitability of a certificate for a portfolio. The descriptions in this chapter are of a general nature, so that overlaps with the previous description of the specific risks and costs cannot be ruled out.

4.2.1 Positive features for private investors

The special suitability of certificates for private investors is due to various characteristics. Depending on the type of investor and investment objective, different weightings must be to the individual criteria. It is therefore not possible to establish a general ranking.

Payout profiles

When comparing certificates and their underlying, the different redemption profiles must first be considered. If an investor invests directly in the underlying, they participate 1:1 in its performance. Profits are generally only possible when prices rise, as in practice it is difficult for private investors to sell short over a longer period of time. If the price of a share stagnates, this always means a return close to zero for direct investments.

The redemption functions of many certificates are very different from the case just described.[254] They have caps, floors, levers and bonuses so that participation in price movements of the underlying can be controlled very precisely. Profits are no longer necessarily linked to a positive price movement of the underlying,

254) Linear certificates are an exception to this rule.

but can also be achieved when prices are stagnating or falling(255).

The large number of different products on a variety of underlyings offers a suitable solution for almost every investor requirement. At the same time, certificates offer a simple way to invest in previously difficult-to-manage investment alternatives such as commodities or exotic options(256).

Liquidity

In view of the extremely high number of different certificates and the sometimes very specific payout profiles, it could be assumed that individual certificates are only in demand by very few investors and are therefore difficult to trade. In principle, this assumption is completely correct. However, as certificates would presumably be very difficult to sell without a certain minimum level of liquidity, the issuers themselves act as counterparties to buy and sell orders, thus ensuring the continuous tradability of their securities. In practice, this is done via so-called market makers. Market makers are the issuers' stock exchange traders who "create" a market for each certificate. To this end, they set buying and selling prices at which they are prepared to trade a certain number of securities.[257] If this number is exceeded, which is rare for private investors, the market maker usually sets a slightly lower price for the remaining certificates.[258]

Small denomination

In contrast to direct investments, certificates the additional advantage that they only require very low minimum investment sums, meaning that even small investors can use them to precisely control the composition of their portfolio. The low price of certificates is generally achieved by the fact that an individual certificate does not relate to a unit of the underlying, but only to a fraction of it. This is expressed by the so-called reference ratio. Unfortunately, no standardized way of describing the subscription ratio has been established among issuers, so that precise regulations must always be taken from the sales prospectus. Table 11 shows two different

255) Jordan, M. (2006), p. 12.
256) Natter, A. (2007), p. 36.
257) Kozubek, W.; Pfluger, B. (2007), p. 15.
258) Schmidt, S. (2005), p. 22 ff.

different spellings for exactly the same facts, which can easily lead to confusion[259].

Subscription ratio	Description
1:10	A certificate represents one tenth of a unit of the underlying
10:1	Ten certificates are required to replicate one unit of the underlying

Table 11: Notation for the reference ratio.

If a simply constructed certificate has a subscription ratio of 1:10 and replicates the price performance of a share with current price of 1000 GE, the value of the certificate corresponds to the value of a tenth of a share, i.e. 100 GE. The certificate therefore allows investors to participate in the relative price changes of the share with a price of 1000 GE with an investment of just 100 GE.

Low costs

In principle, certificates are extremely flexible investment instruments that have a high cost advantage over funds in particular.[260] As already mentioned, this cost advantage is particularly clear in the case of index products, which also very good comparability due to the standardized underlying. The situation is much more difficult for products with low comparability.[261] Here, the behavior of the issuers determines whether or not cost advantages that arise in principle with certificates are actually passed on to investors. Precise knowledge of the possible cost blocks is an important basic prerequisite for clarifying this question.

4.2.2 Costs

The sale of certificates is driven by enormous marketing activities on the part of the banks. The necessary expenditure is of course not made without reason, but is due to this,

259) Winkler, D. (2006), p. 14 f.
260) Harengel, J.; Scheuble, S. (2006), p. 14.
261) Peißner, A. (2008), p. 40.

that certificates are extremely lucrative products for issuers. Because the costs of certificates are sometimes not obvious and are therefore not widely perceived, the idea has become established in the minds of many investors that certificates are generally a particularly favorable form of investment. Although this may be true for some of the products on offer, it must always be re-examined for each certificate.

Once an investor has identified an individual cost item, the second step is to classify it correctly. They must distinguish which part of the costs is used to finance the payout profile and which amount flows to the issuer and therefore does not directly serve the investment objective.

Premium over the fair value

When talking about the fair value of a certificate, investors should be aware that this is not a clearly defined value. In the context of this book, fair value is equated with the replica price valid for a private investor. This is the price that an investor must pay to acquire the individual components of a payout profile. However, the practical implementation of such replication can fail because it is only possible from a certain minimum investment volume and using exotic options to which private investors generally do not have access.

It should be noted that duplication is significantly cheaper for issuers than for private investors because they usually do not replicate individual certificates, but limit themselves to hedging the overall risk of their positions.(262) In this approach, opposing positions balance each other out, resulting in considerable cost savings compared to individual hedging. Despite this cost advantage in replication, however, it can be observed time and again that issuers sell their certificates well above fair value and thus realize enormous profits. Price declines in certificates cannot be brought about by arbitrage because issuers do not allow short selling.(263) One way in which an issuer can profit from a premium over the fair price of a certificate will be described using a hypothetical example:

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262) For the sake of simplicity, however, it is assumed below that issuers always replicate their certificates through a combination of other investment alternatives and hedge at individual position level.

263) Straub, M. (2006), p. 55 f.

Mario has his first day in the certificates department at XYZ Bank and is thinking about how he can further increase the company's profits. He decides to start by reviewing the bank's data on the trading volume of certificates. Mario makes an interesting discovery: he realizes that at the beginning of a certificate's term, XYZ Bank is almost exclusively the seller of the certificate. At the end of the term, however, XYZ Bank is almost exclusively a buyer of certificates on the market. In the middle of the term, there is so little trading that Mario pays no attention to this period.

Armed with the results of his analysis, Mario proposes the following concept to the management of XYZ-Bank: At the beginning of the term, the value of the certificate should be significantly higher than its fair value so that the bank maximizes its income. To ensure that the income generated in this way does not have to be repaid if the certificate is sold prematurely, the price of the certificate must continue to approach the fair value until the end of the term. Since most customers unable to determine the replica price precisely, demand is not expected to fall. Mario uses the graph shown in Figure 63 to make the situation easier to understand. The price of the certificate is to be understood as the average of its bid and ask price.

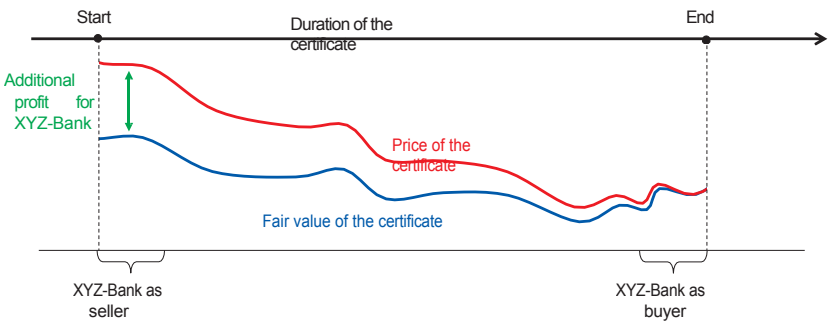

Figure 63: Profit maximization potential of XYZ-Bank.

Enthusiastic about Mario's suggestion, the management of XYZ Bank immediately commissioned him to implement his idea. The prototype proposed is a certificate that offers a very unusual payout

profile, so that its fair value cannot be determined without sound specialist knowledge[264].

Tip Mr. Drill

Determining the replica price of a certificate is extremely difficult for private investors, as they usually do not have access to the price information of the corresponding instruments. In order to get a feel for the price of a certificate, a simple price comparison of similar products from different issuers is therefore recommended.

Waiver of dividends and interest

It can often be observed that issuers are increasingly issuing certificates on high-dividend shares and price indices. The holder of a certificate has no claim to dividend payments that accrue during the term. If an issuer decides to hedge a certificate by acquiring the corresponding underlyings, it can recognize the dividend payments distributed as additional income. In the case of performance indices, where dividend payments are reinvested in the index, issuers are denied this source of income[265].

Interest payments similar to dividend payments. As certificates are actually bonds, investors are in principle also entitled to interest payments from the issuer. However, in the case of certificates, this interest claim is waived in whole or in part or exchanged for a claim from the respective redemption function. Table 12 shows the amount of interest foregone if an investor invests EUR 100 in a certificate from DZ Bank and not in zero-coupon bonds from this issuer.

264) Cf. Wilkens, M.; Scholz, H. (2000), p. 175 and Wilkens, S.; Erner, C.; Röder, K. (2003), p. 55 ff.

265) Rüppel, W. (2004).

Term in years	Bond price in %	Repayment amount per 100 euro investment in euro	Interest waiver in euros
1	95,65	104,55	**4,55**
4	84,45	118,41	**18,41**
7	73,15	136,71	**36,71**
10	63,20	158,23	**58,23**

Table 12: Interest claim for DZ Bank zero-coupon bonds (source: Stuttgart Stock Exchange, as of September 7, 2007).

Spread between bid price and ask price

Another important and much easier to recognize cost item for certificates is the difference between the buying price (bid price) and the selling price (ask price) of the market maker provided by the issuer. This difference is also referred to as the spread.[266] The spread arises because the market maker is prepared to pay a significantly lower price when buying the certificate than he himself demands for selling a certificate.[267] If a market maker receives a buy and a sell order for two positions of the same size at the same time, he receives profits in the amount of the spread.

EXCURSE: Spread

Various key figures for the spread between the bid and ask price are often given together with the price data for certificates. While the absolute level of the spread is only of limited informative value, the relative spread and the homogenized spread offer significantly better comparability[(268).]

The relative spread indicates how high the spread is in relation to the ask price. It is a measure of the minimum amount by which a certificate must rise relative to the ask price in order for the investor to make a profit. It is calculated follows:

$$\frac{\text{Absolute spread Ask}}{\text{price}} \cdot 100$$

266) Natter, A. (2007), p. 20.
267) Straub, M. (2006), p. 58.
268) Szczesny, A., Weyand, H. (2005), p. 46.

The homogenized spread shows an investor what absolute spread he must pay in order to participate in a full unit of the underlying. It is calculated as:

$$\frac{\text{Absolute spread Subscription}}{\text{ratio}}$$

Assuming a certificate a bid price of 9.8 GE, an ask price of 10.2 GE and a subscription ratio of 1:10, its absolute spread is 0.4 GE (10.2-9.8). The relative spread is therefore 3.9% and the homogenized spread is 4 GE.

Management fee and performance fee

Certificates usually refer to a fixed underlying. However, there are also some certificates where the composition of the underlying is adjusted during the term. In this case, many issuers charge a management fee.

In addition, in the case of an actively managed underlying, the issuer may demand a share in the investment performance. This takes the form of a performance fee that is charged to the investor.

Tip Mr. Drill

Due to the different practices of issuers, the amount of the management and performance fee cannot be used to infer the actual management service provided.[269] It is therefore advisable to read the sales prospectus carefully.

Issue premium

If an investor wishes to purchase a certificate directly from the issuer on the day of the IPO, he is often charged a front-end load. The amount of the front-end load is determined by the issuer

269) Hammer, T. (2004) a.

and published.[270] If a certificate is purchased after its initial issue via the stock exchange or via the market maker, no issue premium is charged. If a certificate only has a small spread between the bid and ask price in subsequent stock exchange trading, costs may be saved by purchasing it on the stock exchange.

4.2.3 Risks

In addition to the costs, the risks must also be taken into account when buying certificates. As certificates are a comparatively new form of investment, many investors still lack a sense of how to classify their risks accordingly. Investors should always bear in mind the general risks outlined in this section when deciding to invest in certificates.

Risks of the underlying and the payout profile

Certificates have a clear payout profile that shows the investor exactly which returns he can expect from which performance of the underlying. However, since an investor cannot predict the performance of the underlying, there is a risk that the price of the underlying will develop contrary to his expectations.[271] The selection of the underlying of a certificate generally requires the same care as the selection of a direct investment. If a certificate relates to a portfolio created by the issuer, the investor should understand its exact composition in order to be able to adequately assess the risk assumed.

In the event of an undesirable price development, it ultimately depends on the type of payout profile what impact this will have on the investor and consequently how high the risk he or she bears is. In the worst case scenario, certificates can result in a total loss of the money invested. Additional margin calls that exceed the capital invested do not occur with certificates.

Counterparty risk

As certificates are bonds in purely legal terms, there is always a counterparty risk for the investor. If the issuer becomes insolvent, the investor is threatened with a total loss. In this case

270) Straub, M. (2006), p. 57 f.
271) Götte, R. (2002), p. 25.

the price movements of the underlying or the structure of the agreed payout profile are completely irrelevant(272).

Investors should therefore find out exactly what creditworthiness an issuer has before buying a certificate. The issuer's rating can used for this purpose.[273] Although a very good rating means that the probability of default is extremely low, it should never be confused with a repayment guarantee.

Note Mr. Drill

The counterparty risk emanating from the issuers is often not seen by private investors and is therefore not worthwhile them.[274] In the market for traditional bonds, however, banks also have to pay a risk premium (credit risk premium), as this is always demanded by institutional investors.

Price positioning risk

If an investor wishes to sell a certificate during its term, this is possible at any time via the issuer's market maker. There is therefore no liquidity risk. However, a premature sale entails other risks.

Firstly, the price of the certificate can deviate very significantly from the payout profile applicable at the end of the term, which due to the value of the components contained in a certificate. For example, if a certificate includes a long position in an option, a fall in implied volatility will have a negative impact on the price of the certificate. Changes in interest rates can also have a significant impact on the value of a certificate if it contains a large proportion of zero coupon bonds.

Another risk is that the liquidity of a certificate is only ensured by a single market maker of the issuer, who has a monopoly position. If this market maker decides to widen the spread and only offer certificates at a low bid price, the market maker is at risk.

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272) Wohlwend, H. (2001), p. 256.
273) Goldman Sachs (2007) a.
274) Cf. Baule, R.; Rühling, R.; Scholz, H. (2004), p. 830 f.

investors are at the mercy of this.[275] However, private investors are also dependent on the goodwill of the issuer when comes to pricing. They are often not bound by any specifications when determining the price of a certificate during the term and can theoretically change prices arbitrarily. This creates further income opportunities for the issuer that are difficult to identify and are detrimental to the investor's return[276].

Risks due to special rights of the issuer

The issuers of certificates can grant themselves certain special rights when drafting the sales prospectuses. This can lead to further risks for investors. If certificates without a limited term provide for a special right of termination for the issuer, there is always a risk of unwanted compulsory termination for the investor.[277] Following such a compulsory termination, it is questionable whether the investor will find a comparable investment alternative. If this is not the case, the investor is forced to realize any price losses incurred without having the opportunity to recover the value.

Summary Mr. Drill

- Certificates are bonds whose repayment is based on the performance of an underlying. They can therefore be assigned to the group of derivatives.
- Certificates offer private investors numerous investment opportunities and the chance to invest in complex structures or asset classes that are otherwise difficult to access in a simple way and with small investment amounts.
- As a new investment instrument, certificates also have new sources of cost and risk that investors should always be aware of

275) Although issuers usually state the maximum possible spread, this is usually very high.
276) Straub, M. (2006), p. 56.
277) Winkler, D. (2006), p. 15.