



BARRIER-HIT-REPORT Q4 2016

Bonus Certificates – **only a few barrier hits in Q4 2016**

SmartTrade calculated the barrier breaches of more than **316,000 bonus certificates** in the fourth quarter (Q4) 2016. The calculation includes all products of the twelve largest structured product issuer in Germany.

The main results are:

- Only **3%** of the available bonus certificates had a barrier breach. But a chance to get the bonus is still possible for **97%** of the bonus certificates. The number of barrier breaches in Q4 is on the same level as it was in Q3.
- **Performance comparison:** In 2016 the DAX brought investors a performance of **+6.35%**. Two thirds of the DAX bonus certificates had a higher performance in 2016. In particular with the bonus classic and bonus capped certificates investors received higher returns in comparison with a direct investment in the DAX.
- **Performance comparison Q4 2016:** In the last quarter of 2016 the DAX showed a performance of **+9.9%**. For all DAX certificates with barriers above **9,400** the average performance was higher than the DAX. For example, DAX bonus and bonus capped certificates with a barrier at **10,000 points** performed with **12.4%** in Q4.
- Investors get information on the current barrier hit risk of all bonus certificates on www.smartra.de/bhp and on financial platforms such as **wallstreet:online**.

The fourth quarter in figures

Market overview: in Q4 2016 more than **316,000** bonus certificates were available to investors. Only **3.2%** of these products had a barrier breach in the last three months of last year. For almost **97%** of the available products the barrier remains intact. This means investors have the chance to receive the bonus payment.

While only **2%** of bonus classic and bonus capped certificates had a barrier breach, **11.4%** of reverse and reverse cap products hit the barrier. The reason: in Q4 2016 the price of many underlying's significantly increased.

	Number of products at the beginning of Q4*	Products matured in Q4*	Barrier breach in Q4	Issued products	Number at the end Q4*	Number of products with intact barrier for at least one day in Q4
Bonus-Certificate	235,850	65,851	10,093	79,905	239,811	315,755
- Bonus Classic	60,422	15,443	1,435	16,949	60,493	77,371
- Bonus Cap	150,101	40,496	4,020	47,569	153,154	197,670
- Bonus Reverse	5,410	2,661	1,260	4,059	5,548	9,469
- Bonus Reverse Cap	19,917	7,251	3,378	11,328	20,616	31,245

* without barrier breach

In regards to the calculation: the given numbers in this report always refer to the total volume of issued bonus certificates. As investors capital is not distributed regularly the presented calculation in this report doesn't reflect real gains and losses. This calculation provides conclusions only in regards to the universe of issued products – and not to the capital invested in these products.

Performance comparison Q4: **DAX versus DAX bonus Certificate**

SmartTrade compared the performance of DAX bonus and bonus capped certificates with the DAX.

The result:

The DAX showed a performance of **+9.9%**. For all DAX certificates with barriers above **9,400** the average performance was higher than the DAX. For example, DAX bonus and bonus capped certificates with a barrier at **10,000** points performed with **12.4%** in Q4. Another example: the average performance was **11.3%** for products with a barrier at **9,700** points.

DAX Bonus products with lower barriers – and therefore with less risk to hit the barrier and a higher chance to receive the bonus – had a lower performance than the DAX. For example, products with barriers at **9,000** points performed on average with **7.5%** in Q4. Bonus certificates with barriers at **8,000** points performed with **4.5%**.

In regards to the calculation: all bonus classic and bonus cap were certificates for which a market price was consistently available in Q4. Certificates that were newly issued or expired in Q4 were not taken into account. The performance average is unweighted. I.e., how much capital is invested in the respective certificates could not be considered.

Performance comparison 2016: **DAX** versus **DAX bonus Certificate**

Besides performance comparisons for Q4 **SmartTrade** has compared the performance of **DAX-bonus** certificates with the DAX performance for the entire year of 2016. Approximately **4,900** bonus-certificates, which were issued before the 01.01.2016 and not matured in 2016, were subject to consideration.

The result: The DAX achieved a performance of **+6.35%** last year. Two-thirds of the considered bonus certificates had a higher performance in 2016. The average performance of the considered bonus certificates was **6.55%**.

A view on different product classes offer interesting results:

- Performance of all bonus classic certificates (1,135 products): **8.83%**
- Performance of all bonus Cap certificates (2,462 products): **9.05%**
- Performance of all bonus reverse certificates (274 products): **- 4.56%**
- Performance of all bonus reverse Cap certificates (999 products): **0.84%**

The DAX largely took a sideways movement in 2016 – with the exception of the turmoil at the beginning of the year and the year-end-rally. The potential of bonus certificates shows up during such market phases. The study impressively demonstrated this. Investors who invested 2016 in DAX bonus classic or capped bonus certificates instead of the DAX were, on average, able to achieve a significantly better performance.

Changes in the **barrier hit probability** in Q4

The probability of a barrier hit is not static, but a dynamic ratio that is continuously changing. It is determined by three factors:

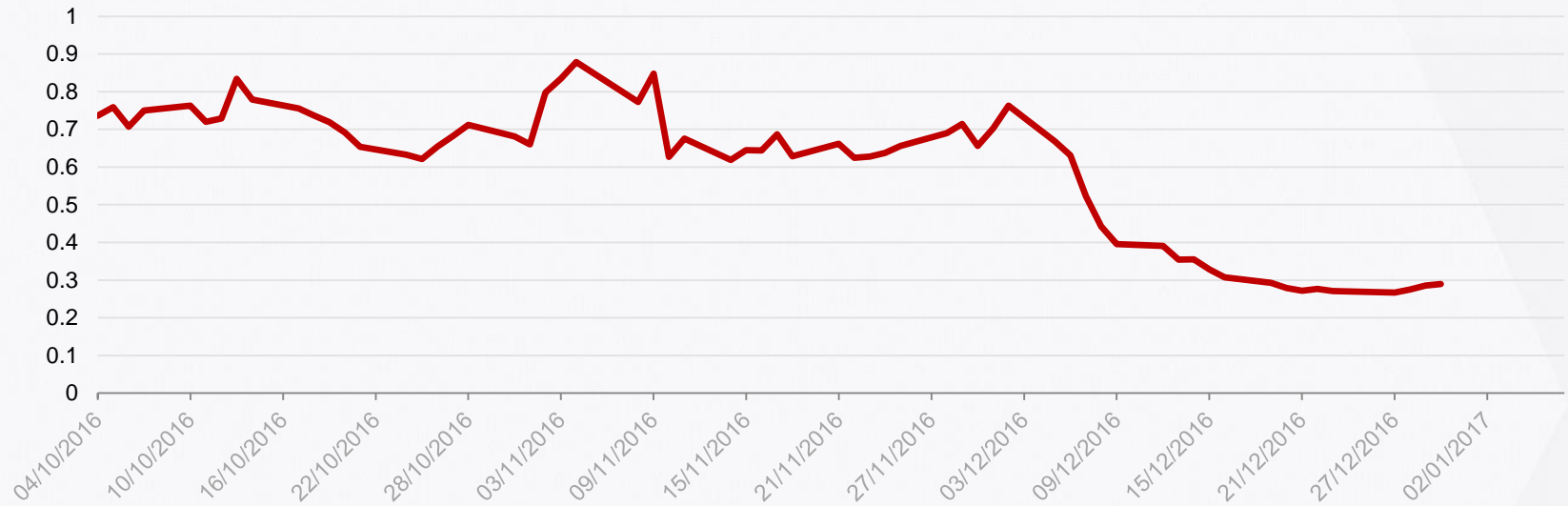
Firstly, by the distance from the barrier. The higher the difference between the price of the underlying and the barrier, the lower the probability of a barrier hit event.

The second factor is the expiry of the bonus certificate. Decreasing time to expiry reduces the chance to hit the barrier. (Background: for bonus certificates, calculated by SmartTrade, the probability of a barrier-hit always relates to the end of duration).

And thirdly, the implied volatility. It reflects the expectations of market participants to the future volatility of the underlying. As a general rule: declining implied volatility goes hand in hand with decreasing barrier hit probability.

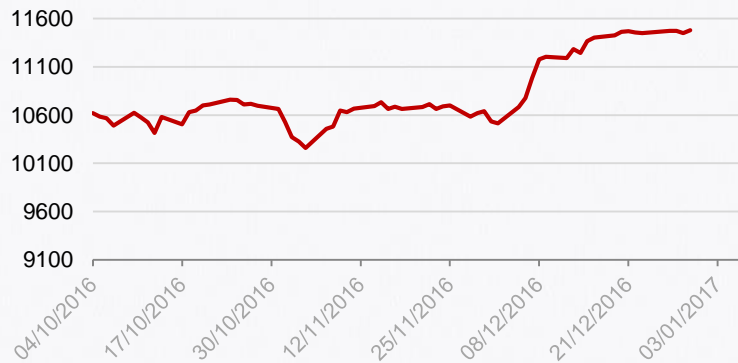
The following graph shows the barrier hit probability for a DAX bonus classic certificate. The duration is **9 months** and the barrier stands at **10.000 points**. The illustrations below show developments by DAX and VDAX.

Development of **barrier hit probability** in Q4 2016 for an exemplary **DAX bonus classic certificate**:



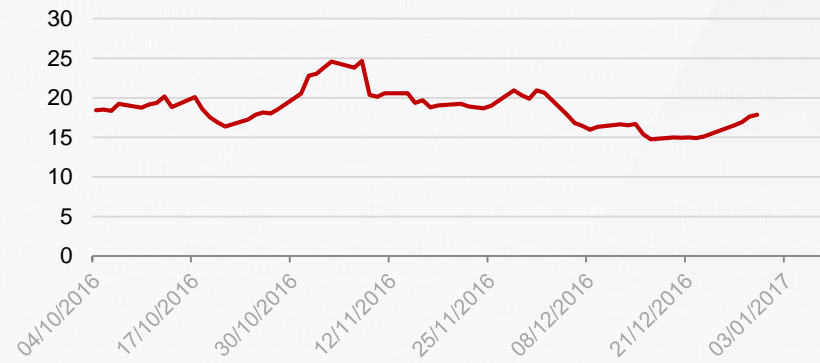
* Source: SmartTrade. Certificate with duration of nine months and a barrier at 10,000 points.

Development of **DAX** in Q4



* Source: SmartTrade Indication

Development of **VDAX** in Q4



* Source: SmartTrade Indication

Translation of barrier hit risk into **distance to barrier**

For many investors the distance to the barrier is the only concrete parameter to determine the barrier hit risk. However, the risk of a barrier breach corresponds to different distances to the barrier depending on the market situation. The main reason for this is the different volatility in the market.

The following table shows an example, in which distances to the barrier translates into barrier hit probabilities from **10%** to **90%** with **DAX bonus certificates** (excluding reverse variants) with a six month duration at the end of Q4.

Translation of barrier hit probability (BHP) to the buffer of DAX-bonus certificates with six months remaining maturity - at the end of Q4.

BHR	Buffer in DAX points at the end of Q4 2016
10%	2,350
20%	1,950
30%	1,550
40%	1,300
50%	1,000
60%	800
70%	600
80%	450
90%	350

Tool for Calculating the Probability of **Barrier Breach**


SmartTrade calculates the probability of barrier breach in real time for certificates registered in Germany. The barrier-hit-risk tool shows investors the current probability of a barrier breach. Issuers - including Citigroup - as well as financial platforms such as **wallstreet:online** publish barrier hit probabilities calculated by **SmartTrade** on their websites.

[Barrier-Hit-Risk Tool »](#)

Suchen »
Beispiel: DAX, NASDAQ 100, S&P 500, EURO STOXX 50, Nikkei 225, Gold

Produktinformationen								
ISIN	Emittent	Basiswert	Produkttyp	Cap	Bonuslevel	Barriere	Laufzeit	Barrier-Hit-Risiko aktuell
AT0000A1HTF2	Raiffeisen Centrobank AG	DAX	Bonus-Zertifikate - Cap	12500	12500	8600	21.06.2017	66.6% <small>(6. April 2016, 21:36:35)</small>

Entwicklung des Barriere-Bruch-Risikos



Zoom: 1M 6M 1J alles

Barriere-Bruch-Wahrscheinlichkeit in %

Highcharts.com

Ratio	Barriere-Hit-Risiko	Laufzeit	
0,01	66,604%	21.06.2017	>>
0,01	53,608%	21.06.2017	>>
0,01	67,221%	20.12.2017	>>
0,14	0,100%	30.06.2016	>>
0,01	5,440%	22.06.2016	>>
0,01	0,100%	22.12.2016	>>
0,01	0,100%	21.07.2016	>>
0,01	13,104%	27.07.2017	>>
0,01	0,100%	17.06.2016	>>
0,01	1,027%	17.06.2016	>>
0,01	3,018%	17.06.2016	>>
0,01	6,143%	17.06.2016	>>

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Erklären BIP Bond Options Pricer Profitmaximierer
Barriere-Hit-Risiko

für Anleger maßgeblich davon ab, ob der Risk-Tool können Anleger die aktuelle

 Suchen »

Barriere	Laufzeit	Barrier-Hit-Risiko aktuell
8600	21.06.2017	66.6% <small>(6. April 2016, 21:43:23)</small>



THANK YOU FOR YOUR ATTENTION!

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