

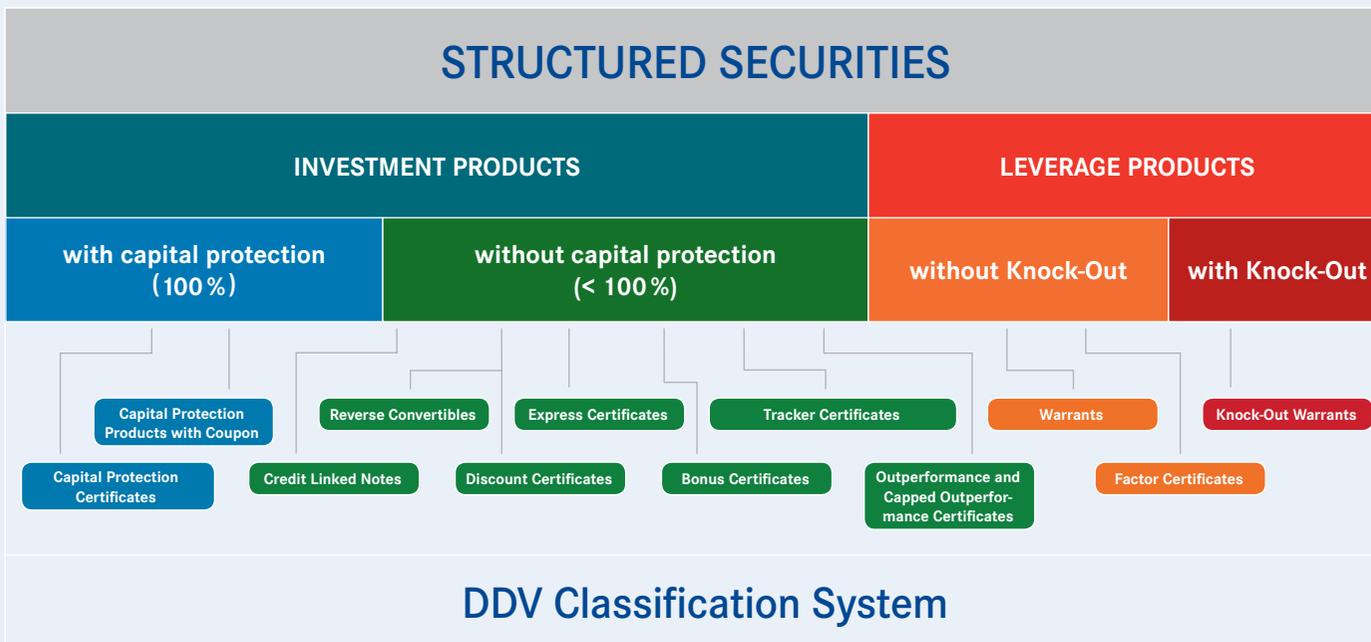
Market Volume

in Derivatives

Positive start to the second half of the year

Express Certificates and Discount Certificates in particularly high demand

STRUCTURED SECURITIES



DDV Classification System

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July | 2018

- In July, the total volume of the German structured products market rose to EUR 72.3 billion.
- Express Certificates outperformed the market: they went up by 4.7 percent and came in with a volume of EUR 14.9 billion.
- The market volume of leverage products rose by 11.4 percent to EUR 2.3 billion.
- Leverage products with equities as an underlying recorded a growth of 12.6 percent. The volume invested in them increased to EUR 1.6 billion.

Positive start to the second half of the year

Express Certificates and Discount Certificates in particularly high demand

The outstanding volume of the German structured products market increased significantly at the beginning of the second half of the year. Extrapolating the figures to all issuers puts the total volume of the German structured products market at EUR 72.3 billion at the end of July 2018. This corresponds to an increase of 2.3 percent or EUR 2.0 billion month on month. These trends are shown by the latest figures collected each month from 16 banks by the European Derivatives Group (EDG AG) on behalf of the German Derivatives Association (Deutscher Derivate Verband, DDV). The ratio of investment products to leverage products shifted slightly in favour of leverage products.

Investment products by product category

The positive overall trend meant that demand was up on the previous month in almost all product categories. **Express Certificates** and **Discount Certificates** in particular experienced an above-average rise in volumes. The volume invested in Express Certificates increased to EUR 14.9 billion as a result. **Capital Protection Products** offering full capital protection also recorded growth. The volume invested in these product categories totalled EUR 24.0 billion in July. **Credit Linked Notes** bucked the trend by recording decline.

Leverage products by product category

The market volume of **Leverage Products** rose to EUR 2.3 billion in July. Marked increases were seen in all product categories, with the most significant growth in **Knock-Out Warrants**.

Investment products by underlying

Structured products with **interest rates as an underlying** remained the most popular category in July. Having risen in the previous month, their volume increased again slightly to EUR 22.9 billion. Investment products with **equities as an underlying** followed in second place. The volume invested in them totalled EUR 21.0 billion. Investment products with **indices as an underlying** also went up, after a decrease in the previous month. The market volume of investment products with **commodities** or **currencies as an underlying** rose to altogether EUR 661.6 million. Investment products with **funds as an underlying** recorded an increase to EUR 735.3 million.

Leverage products by underlying

The dominant categories of underlying leverage products gained in popularity among investors at the beginning of the second half of 2018. The market volume of leverage products with **equities as an underlying** went up to EUR 1.6 billion, while the volume invested in leverage products with **indices as an underlying** rose to EUR 595.7 million. The market volume of leverage products with **commodities as an underlying** fell to EUR 114.9 million, despite the general upward trend. Leverage products with **currencies as an underlying** also recorded negative growth, whereas the volume invested in leverage products with **interest rates as an underlying** rose to EUR 26.2 million. ■



Deutscher Derivate Verband (DDV)

Deutscher Derivate Verband (DDV), the German Derivatives Association, is the industry representative body for the leading issuers of derivative securities in Germany, who represent more than 90 percent of the German structured products market: BayernLB, BNP Paribas, Citigroup, Commerzbank, DekaBank, Deutsche Bank, DZ BANK, Goldman Sachs, Helaba, HSBC Trinkaus, HypoVereinsbank, LBBW, Morgan Stanley, Société Générale, UBS and Vontobel. Furthermore, the Association's work is supported by seventeen sponsoring members, which include the Stuttgart and Frankfurt Exchanges, Baader Bank, the direct banks comdirect bank, Consorsbank, DAB Bank, flatex, ING-DiBa and S Broker, as well as finance portals and other service providers.

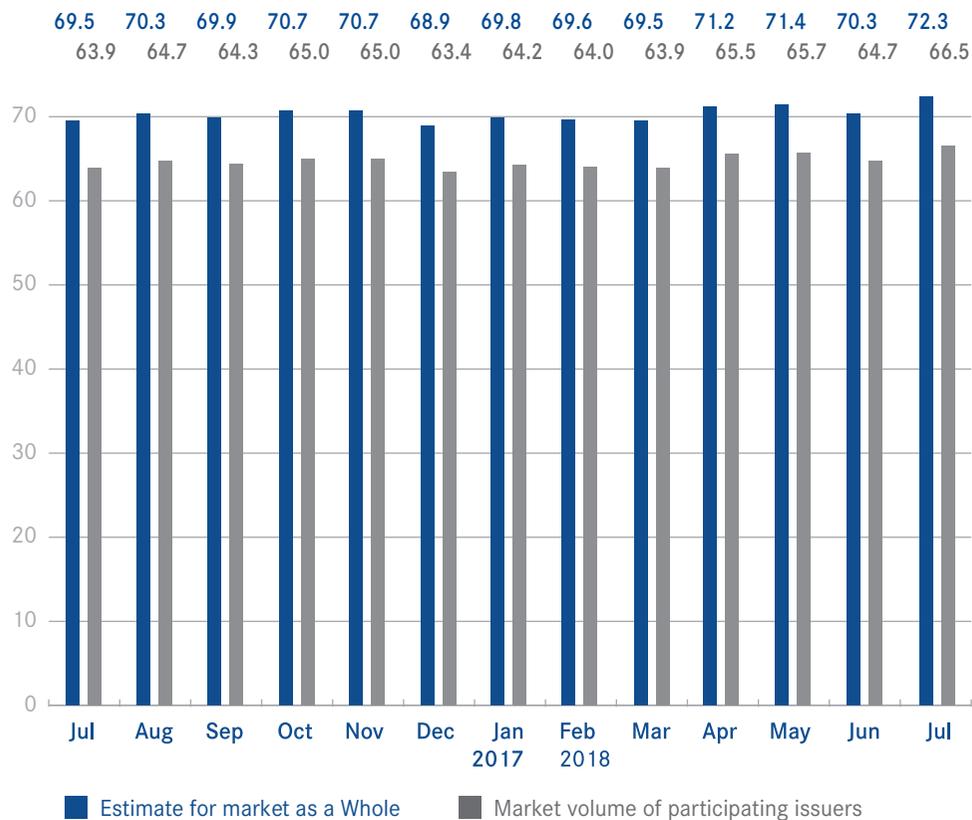
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Market volume since July 2017



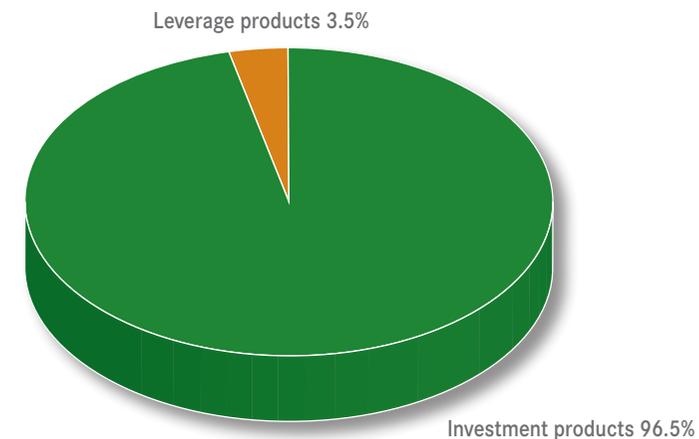
Product classes

Market volume as at 31 July 2018

| Product classes | Market volume | Share |
|--|-------------------|---------------|
| | T€ | % |
| Investment products with capital protection | 24,049,336 | 37.5% |
| Investment products without capital protection | 40,076,643 | 62.5% |
| Total Investment products | 64,125,979 | 100.0% |
| Leverage products without Knock-Out | 1,389,972 | 59.4% |
| Leverage products with Knock-Out | 951,957 | 40.6% |
| Total Leverage products | 2,341,929 | 100.0% |
| Total Investment products | 64,125,979 | 96.5% |
| Total Leverage products | 2,341,929 | 3.5% |
| Total Derivatives | 66,467,908 | 100.0% |

Product classes

Market volume as at 31 July 2018

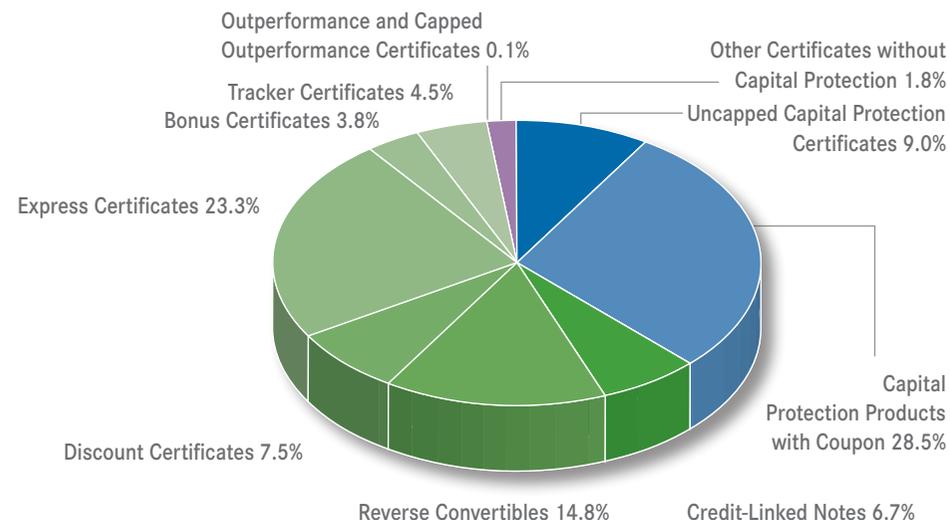


Market volume by product category as at 31 July 2018

| Product categories | Market volume | | Market volume price-adjusted | | Number of Products | |
|---|-------------------|---------------|------------------------------|---------------|--------------------|---------------|
| | T€ | in % | T€ | in % | # | in % |
| ■ Uncapped Capital Protection Certificates | 5,746,980 | 9.0% | 5,731,281 | 9.0% | 1,566 | 0.3% |
| ■ Capital Protection Products with Coupon | 18,302,357 | 28.5% | 18,362,113 | 29.0% | 3,548 | 0.8% |
| ■ Credit-Linked Notes | 4,308,547 | 6.7% | 4,307,232 | 6.8% | 2,390 | 0.5% |
| ■ Reverse Convertibles | 9,466,259 | 14.8% | 9,268,096 | 14.6% | 116,893 | 25.2% |
| ■ Discount Certificates | 4,835,104 | 7.5% | 4,749,438 | 7.5% | 155,471 | 33.5% |
| ■ Express Certificates | 14,943,849 | 23.3% | 14,561,139 | 23.0% | 12,584 | 2.7% |
| ■ Bonus Certificates | 2,409,323 | 3.8% | 2,349,041 | 3.7% | 167,938 | 36.2% |
| ■ Tracker Certificates | 2,899,770 | 4.5% | 2,840,606 | 4.5% | 1,340 | 0.3% |
| ■ Outperformance and Capped Outperformance Certificates | 83,764 | 0.1% | 80,505 | 0.1% | 938 | 0.2% |
| ■ Other Certificates without Capital Protection | 1,130,027 | 1.8% | 1,111,705 | 1.8% | 955 | 0.2% |
| Investment products total | 64,125,979 | 96.5% | 63,361,156 | 96.4% | 463,623 | 29.7% |
| ■ Warrants | 967,008 | 41.3% | 1,013,507 | 42.3% | 594,606 | 54.3% |
| ■ Factor Certificates | 422,964 | 18.1% | 481,061 | 20.1% | 15,133 | 1.4% |
| ■ Knock-Out Warrants | 951,957 | 40.6% | 900,154 | 37.6% | 486,116 | 44.4% |
| Leverage products total | 2,341,929 | 3.5% | 2,394,722 | 3.6% | 1,095,855 | 70.3% |
| Total | 66,467,908 | 100.0% | 65,755,878 | 100.0% | 1,559,478 | 100.0% |

Investment products by product category

Market volume as at 31 July 2018

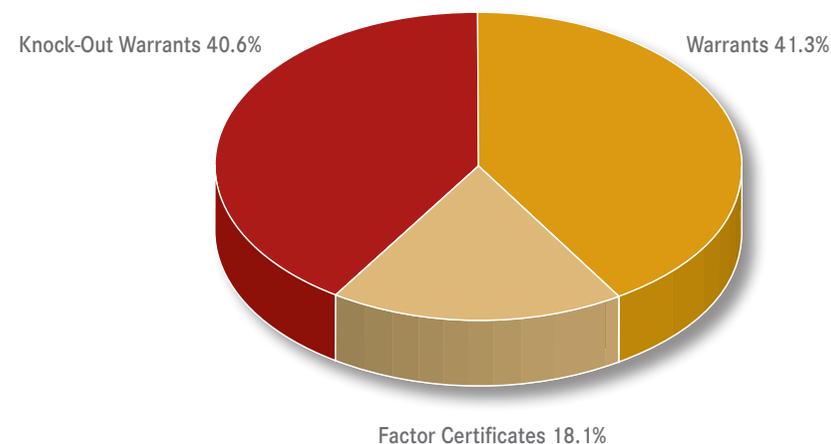


Change in market volume by product category in comparison with previous month

| Product categories | Change | | Change price-adjusted | | Price effect | |
|---|------------------|--------------|-----------------------|--------------|--------------|--------------|
| | T€ | in % | T€ | in % | | in % |
| ■ Uncapped Capital Protection Certificates | 16,276 | 0.3% | 577 | 0.0% | | 0.3% |
| ■ Capital Protection Products with Coupon | 154,726 | 0.9% | 214,482 | 1.2% | | -0.3% |
| ■ Credit-Linked Notes | -101,920 | -2.3% | -103,235 | -2.3% | | 0.0% |
| ■ Reverse Convertibles | 163,223 | 1.8% | -34,940 | -0.4% | | 2.1% |
| ■ Discount Certificates | 225,090 | 4.9% | 139,424 | 3.0% | | 1.9% |
| ■ Express Certificates | 672,744 | 4.7% | 290,034 | 2.0% | | 2.7% |
| ■ Bonus Certificates | 54,131 | 2.3% | -6,151 | -0.3% | | 2.6% |
| ■ Tracker Certificates | 84,780 | 3.0% | 25,615 | 0.9% | | 2.1% |
| ■ Outperformance and Capped Outperformance Certificates | 7,598 | 10.0% | 4,339 | 5.7% | | 4.3% |
| ■ Other Certificates without Capital Protection | 3,370 | 0.3% | -14,952 | -1.3% | | 1.6% |
| Investment products total | 1,280,017 | 2.0% | 515,193 | 0.8% | | 1.2% |
| ■ Warrants | 87,207 | 9.9% | 133,706 | 15.2% | | -5.3% |
| ■ Factor Certificates | 15,596 | 3.8% | 73,693 | 18.1% | | -14.3% |
| ■ Knock-Out Warrants | 136,071 | 16.7% | 84,268 | 10.3% | | 6.3% |
| Leverage products total | 238,874 | 11.4% | 291,667 | 13.9% | | -2.5% |
| Total | 1,518,891 | 2.3% | 806,860 | 1.2% | | 1.1% |

Leverage products by product category

Market volume as at 31 July 2018



Market volume by underlying asset as at 31 July 2018

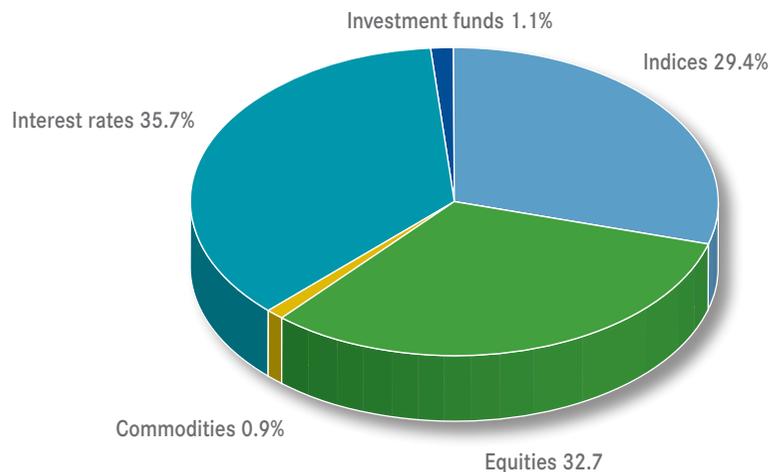
| Underlying | Market volume | | Market volume price-adjusted* | | Number of Products | |
|----------------------------|-------------------|---------------|-------------------------------|---------------|--------------------|---------------|
| | T€ | % | T€ | % | # | % |
| Investment products | | | | | | |
| Indices | 18,874,888 | 29.4% | 18,658,562 | 29.4% | 101,400 | 21.9% |
| Equities | 20,960,521 | 32.7% | 20,355,536 | 32.1% | 353,546 | 76.3% |
| Commodities | 592,229 | 0.9% | 611,059 | 1.0% | 2,412 | 0.5% |
| Currencies | 69,421 | 0.1% | 55,611 | 0.1% | 17 | 0.0% |
| Interest rates | 22,893,614 | 35.7% | 22,954,019 | 36.2% | 6,005 | 1.3% |
| Investment funds | 735,307 | 1.1% | 726,368 | 1.1% | 243 | 0.1% |
| | 64,125,979 | 96.5% | 63,361,156 | 96.4% | 463,623 | 29.7% |
| Leverage products | | | | | | |
| Indices | 595,731 | 25.4% | 645,662 | 27.0% | 255,360 | 23.3% |
| Equities | 1,565,446 | 66.8% | 1,509,559 | 63.0% | 729,732 | 66.6% |
| Commodities | 114,875 | 4.9% | 172,180 | 7.2% | 50,546 | 4.6% |
| Currencies | 39,650 | 1.7% | 42,261 | 1.8% | 52,121 | 4.8% |
| Interest rates | 26,227 | 1.1% | 25,060 | 1.0% | 8,096 | 0.7% |
| Investment funds | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| | 2,341,929 | 3.5% | 2,394,722 | 3.6% | 1,095,855 | 70.3% |
| Total | 66,467,908 | 100.0% | 65,755,878 | 100.0% | 1,559,478 | 100.0% |

*Market volume adjusted for price changes = quantity outstanding as at 31 July 2018 x price as at 30 June 2018

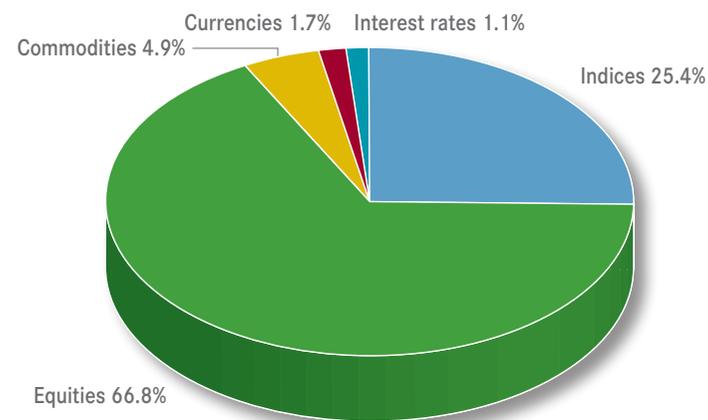
Change in the market volume by underlying asset in comparison with previous month

| Underlying | Change | | Change price-adjusted | | Price effect |
|----------------------------|------------------|--------------|-----------------------|--------------|--------------|
| | T€ | % | T€ | % | |
| Investment products | | | | | |
| Indices | 312,781 | 1.7% | 96,455 | 0.5% | 1.2% |
| Equities | 789,165 | 3.9% | 184,179 | 0.9% | 3.0% |
| Commodities | 30,048 | 5.3% | 48,878 | 8.7% | -3.3% |
| Currencies | 2,632 | 3.9% | -11,178 | -16.7% | 20.7% |
| Interest rates | 113,729 | 0.5% | 174,135 | 0.8% | -0.3% |
| Investment funds | 31,662 | 4.5% | 22,724 | 3.2% | 1.3% |
| | 1,280,017 | 2.0% | 515,193 | 0.8% | 1.2% |
| Leverage products | | | | | |
| Indices | 78,083 | 15.1% | 128,015 | 24.7% | -9.6% |
| Equities | 175,336 | 12.6% | 119,450 | 8.6% | 4.0% |
| Commodities | -15,137 | -11.6% | 42,168 | 32.4% | -44.1% |
| Currencies | -1,952 | -4.7% | 659 | 1.6% | -6.3% |
| Interest rates | 2,544 | 10.7% | 1,377 | 5.8% | 4.9% |
| Investment funds | 0 | n. a. | 0 | n. a. | n. a. |
| | 238,874 | 11.4% | 291,667 | 13.9% | -2.5% |
| Total | 1,518,891 | 2.3% | 806,860 | 1.2% | 1.1% |

Investment products by underlying asset Market volume as at 31 July 2018



Leverage products by underlying asset Market volume as at 31 July 2018



Collection, validation and analysis methodology

1. Calculation of the market volume

In calculating the outstanding volume, the first step is to establish the market volume for an individual issue by multiplying the quantity outstanding by the market price on the last trading day of the month under review. The total market volume is calculated by adding the individual values. The price-adjusted figure is obtained by valuing the outstanding quantities at the market prices on the last trading day of the previous month. Newly launched products are valued at the price on the last trading day in the month under review.

2. Calculation of the turnover

Turnover is calculated at the relevant exercise price by aggregating the individual trades per issue and period and then adding them up. Purchases and sales are included at their relevant absolute amounts. The only turnover recorded is that relating to end customers. Also, issues are not classified as turnover until their value dates. By contrast, repayments are not included in the turnover figures, since they do not constitute actual trades. This means that there is a natural outflow of funds at the maturity date of the products, although this is offset by new issues if investors continue to invest in these investment classes. This turnover calculation can lead to inflows of funds in one investment class in one month that exceed the turnover recorded for that month in terms of their amounts. Also, large price fluctuations can lead to a change in the market volume that exceeds the turnover amount in terms of its amount.

3. Definition of the retail products covered

The collection and analysis process covers market volume and turnover in retail products that are publicly offered and listed on at least one German stock exchange in the relevant survey period. Private placements, institutional transactions and white-label trading are not covered. The possibility that parts of an issue may be bought by institutional investors, for instance through the stock exchange, cannot be ruled out.

4. DDV classification system (Derivatives League)

The product classification system used is based on DDV's Derivatives League concept. Investment products include Uncapped Capital Protection Certificates, Capital Protection Products with Coupon, Reverse Convertibles, Discount Certificates, Express Certificates, Bonus Certificates, Tracker Certificates, Outperformance and Capped Outperformance Certificates, as well as other investment products without capital protection. Leverage products comprise Warrants and Knock-Out Warrants. (For further details please refer to http://www.derivateverband.de/DE/MediaLibrary/Document/ddv_klassifizierung_final.pdf).

5. Differentiation by investment class

Retail products are differentiated by the investment class of the underlying. All products with an equity component are included among the equity-based investment or leverage products. Products with a purely bond-based underlying (e.g. index certificates based on the German REX bond index, capital protected certificates based on the EURIBOR Euro Interbank Offered Rate) are included in the investment class of bonds. The currencies and commodities investment class comprises products based on goods, commodities and currencies. Hedge fund products are also shown separately.

6. Collection of the data

Each month, the issuers provide the relevant data in a specified scope and format from their internal systems (trading, risk management and pricing systems etc.). The mandatory information comprises ISIN, product type, asset class of the underlying, product category, turnover, market volume, quantity outstanding, maturity date of the products, product name, issue date, issue volume (quantity issued). The optional information includes details of the underlying, the knock-out thresholds, market prices and listings on German stock exchanges.

7. Monitoring of compliance with the self-commitment

Compliance with the code of conduct is monitored by means of on-site and off-site inspection of data and systems. Random sampling and targeted requests for selected information are backed up by cross-checking of data using stock exchange data, information services and the websites of issuers. In particular, the data are reconciled on a regular basis in cooperation with Boerse Stuttgart, with the main focus on stock exchange listing, the categorisation of products and the substantiation of figures for turnover and outstanding volumes.

DISCLAIMER

EDG AG regularly checks the methods and analyses on which this interpretation is based. However, it does not guarantee the correctness of the analyses. By signing up to the voluntary agreement, the issuers have agreed to ensure the correctness of the transaction data provided by them, and on which the analysis is based. However, EDG AG cannot guarantee the correctness or the completeness of the data from the issuers.

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