Auctioning

German Auctioning of Emission Allowances
Periodical Report: July 2017
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German Auctioning of Emission Allowances

The German auctions of the third trading period are held weekly on the European Energy Exchange (EEX) spot market. The German Emissions Trading Authority (DEHSt) at the German Environment Agency is the competent authority for the German auctions. Further updated information on the third trading period auctions can be downloaded from the EEX website. Reports on the second and third trading period auction results are available on the DEHSt auction website. The 2017 auction calendar is published on the EEX website.

The following tables summarise the key data of the German auctions on the EEX in 2017:

<table>
<thead>
<tr>
<th>2017</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auction product</td>
<td>Third trading period EUA spot contracts</td>
</tr>
<tr>
<td>Period</td>
<td>13/01/2017 to 15/12/2017</td>
</tr>
<tr>
<td>Auction volume entire year</td>
<td>196,820,000 EUA</td>
</tr>
<tr>
<td>Auction volume per auction</td>
<td>4,473 million EUA</td>
</tr>
<tr>
<td>2017</td>
<td>2.2375 million EUA in August</td>
</tr>
<tr>
<td>Auction frequency</td>
<td>Weekly (Fridays, 09:00 to 11:00 a.m. CET)</td>
</tr>
<tr>
<td>Bid volume</td>
<td>500 EUA</td>
</tr>
<tr>
<td>Auction mode</td>
<td>Single-round, uniform-price procedure with a closed order book</td>
</tr>
</tbody>
</table>

1 Current Developments

EEX holds 500th German auction of emission allowances

Between 1st September 2017 and 5th January 2010, EEX has auctioned more than 900 million emission allowances on behalf of the Federal Republic of Germany. Including the 500th auction, revenue of approximately EUR 6 billion in total has been generated. These funds have been used almost completely for financing national and international climate protection measures.

Please see the corresponding press information.

EEX has published the 2017 auction calendar for aviation allowances

Upon consultation with the European Commission, the participating Member States and the German Emissions Trading Authority (DEHSt), the European Energy Exchange (EEX) has published on 08/08/2017 the 2017 auction calendar for the auctioning of aviation allowances (EUAA).

The auction on the German platform will take place on Wednesday, 08/11/2017 from 13:00 a.m. to 15:00 a.m. (CET). EEX will auction on behalf of the Federal Republic of Germany a total volume of 675,500 EUAA on the spot market. Aviation auctions conducted on behalf of the other Member States are also scheduled on Wednesdays.

Please see the EEX auction calendar 2017 for detailed information on all auction dates of emission allowances (EUA) and aviation allowances (EUAA).
2 Overview

2.1 July 2017

In July, four auctions of emission allowances (EUA) of the third trading period were carried out for Germany at the EEX.

Overall 17,892,000 EUA with a total value of € 93,038,400 were auctioned. This results in a volume-weighted average price per allowance of € 5.20 (+4.2 percent compared to the previous month). Thus, this was the highest monthly average price this year. The deviations of the clearing prices from the current prices on the lead market fluctuated between -0.78 and +0.19 percent (see also Section 4.3).

Overall, valid bids totalling about 46 million allowances were entered into trading system across the four EUA-auction dates. Thus the average cover ratio in the reporting period was 2.56 (see also Section 3.2). The average participation number of 19 bidders was below the level of the previous month (21). The average number of successful bidders was however slightly above the previous month level at 16 (15), (see also Section 3.1).

The following table gives an overview of the most important auction figures from the EUA-auctions performed during the reporting period.

Table 1: Overview of German EUA-auctions in July 2017

<table>
<thead>
<tr>
<th>Date</th>
<th>Auction volume</th>
<th>Bid volume</th>
<th>Cover ratio</th>
<th>Bidders</th>
<th>Successful bidders</th>
<th>Price</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/07/2017</td>
<td>4,473,000</td>
<td>10,530,000</td>
<td>2.35</td>
<td>17</td>
<td>12</td>
<td>€ 5.24</td>
<td>€ 23,438,520</td>
</tr>
<tr>
<td>14/07/2017</td>
<td>4,473,000</td>
<td>10,685,000</td>
<td>2.39</td>
<td>15</td>
<td>14</td>
<td>€ 5.27</td>
<td>€ 23,572,710</td>
</tr>
<tr>
<td>21/07/2017</td>
<td>4,473,000</td>
<td>14,812,000</td>
<td>3.31</td>
<td>19</td>
<td>16</td>
<td>€ 5.23</td>
<td>€ 23,393,790</td>
</tr>
<tr>
<td>28/07/2017</td>
<td>4,473,000</td>
<td>9,860,000</td>
<td>2.20</td>
<td>24</td>
<td>21</td>
<td>€ 5.06</td>
<td>€ 22,633,380</td>
</tr>
</tbody>
</table>

July 17,892,000 45,887,000 *2.56 *19 *16 *€ 5.20 € 93,038,400

Source: EEX, DEHSt
* Average

2.2 Overview of the entire year 2017

In the first seven month of the current year a total of 116,298,000 EUA with a total value of € 581,668,920 were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of € 5.00.

The amount of emission allowances to be auctioned by Germany in 2017 totals 196,820,000 EUA. Taking into account the total annual amount, about 59 percent of the EUA-auction budget for 2017 has been auctioned to date.

The following table summarises the auction results on a monthly basis.

Table 2: Overview of the entire year 2017

<table>
<thead>
<tr>
<th>Month</th>
<th>Type</th>
<th>Auction volume</th>
<th>Bid volume</th>
<th>Cover ratio</th>
<th>Bidders</th>
<th>Successful bidders</th>
<th>Price</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>EUA</td>
<td>13,419,000</td>
<td>38,880,000</td>
<td>*2.90</td>
<td>*21</td>
<td>*13</td>
<td>€ 5.09</td>
<td>€ 68,302,710</td>
</tr>
<tr>
<td>February</td>
<td>EUA</td>
<td>17,892,000</td>
<td>48,750,000</td>
<td>*2.72</td>
<td>*20</td>
<td>*15</td>
<td>€ 5.17</td>
<td>€ 92,501,640</td>
</tr>
<tr>
<td>March</td>
<td>EUA</td>
<td>22,365,000</td>
<td>64,004,500</td>
<td>*2.86</td>
<td>*21</td>
<td>*15</td>
<td>€ 5.10</td>
<td>€ 114,016,770</td>
</tr>
<tr>
<td>April</td>
<td>EUA</td>
<td>13,419,000</td>
<td>35,394,000</td>
<td>*2.64</td>
<td>*20</td>
<td>*15</td>
<td>€ 4.77</td>
<td>€ 64,008,630</td>
</tr>
<tr>
<td>May</td>
<td>EUA</td>
<td>13,419,000</td>
<td>27,449,000</td>
<td>*2.04</td>
<td>*19</td>
<td>*12</td>
<td>€ 4.52</td>
<td>€ 60,609,150</td>
</tr>
<tr>
<td>June</td>
<td>EUA</td>
<td>17,892,000</td>
<td>42,903,000</td>
<td>*2.40</td>
<td>*21</td>
<td>*15</td>
<td>€ 4.99</td>
<td>€ 89,191,620</td>
</tr>
<tr>
<td>July</td>
<td>EUA</td>
<td>17,892,000</td>
<td>45,887,000</td>
<td>*2.56</td>
<td>*19</td>
<td>*16</td>
<td>€ 5.20</td>
<td>€ 93,038,400</td>
</tr>
</tbody>
</table>

Total 116,298,000 303,267,500 *2.61 *20 *14 *€ 5.00 € 581,668,920

Source: EEX, DEHSt
* Average
3 Bidder Participation

3.1 Participation

The number of participants in the German EUA-auctions in July averaged across all dates was 19 bidders. The average number of successful bidders was about 16. Participation in the auctions fluctuated between 15 and 24 bidders during the reporting period. At the auction on 28/07/2017, the highest bidder participation (24) at a German EUA-auction since March 2016 was reached. The number of successful participants in July ranged from 12 to 21. On 28/07/2017, the number of successful bidders was with 21 at its highest level since November 2013. There was no such auction where all participating bidders were successful.

The following figure illustrates EUA-auction participation over time.

![Graph showing participation and successful bidders per auction date](source.png)

**Figure 1:** Number of participating and successful bidders per auction date (EUA)

3.2 Volume Demand

During the reporting period, the aggregated bid volumes per auction date fluctuated from 9.9 to 14.8 million allowances. Overall, valid bids totalling about 46 million allowances were entered into trading system in July. The resulting cover ratios during the reporting period ranged between 2.20 and 3.31 (2.56 on average).

The figure below summarises the results for each EUA-auction date.
Info Box: Uniform Price Auction at the EEX

The auctions at the EEX follow the uniform price procedure which is common practice throughout the European Union. It involves one round of bidding and a closed order book. This simple and robust procedure protects against market manipulation and was used already for German auctions during the second trading period. The uniform price procedure means that all successful bidders pay the same price. The auction clearing price is determined by ranking all eligible bids, beginning with the highest bid, according to the bidding price.

In the event of equal bids, the bids are sorted by a random process. The bid volumes are aggregated starting with the highest bid until the volume of emission allowances on offer (e.g. 4.473 million EUA) is reached. The bid price at which the aggregate volume of bids reaches or exceeds the offered volume of auctioned allowances determines the auction clearing price.

Bidders will thus be awarded their bid volume if their bidding price at least matches the auction clearing price. If a bid matches the clearing price exactly, the bidder may be awarded the remaining allowances which may be below the volume requested, depending on the bidding situation. If the bid from several participants matches the auction clearing price exactly, the above-mentioned random process applies.

Figure 2: Auctioned and bid volume and cover ratio for each auction date (EUA)

Thus, the average bid volume per EUA-auction participant in July was about 610,000 allowances. The average volume awarded to each successful bidder was about 285,000 allowances.

Awarding allowances at all auctions is based on the EU-wide applicable uniform price procedure with one prescribed round of bidding (also see Info box below).
4  Auctions and the Secondary Market

4.1 Trading Volume EUA

In July 2017, a total of about 18 million EUA were auctioned at the EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 483 million EUA.\(^1\) This comprises the monthly data of the London Energy Brokers’ Association (LEBA) on OTC (see also Figure 5). The inclusion of this data allows for a more complete picture of the entire market volume in EUA trades.\(^2\)

The secondary market trading volume of 392 million EUA was divided into approximately 338 million EUA on the cleared futures market, some 35 million EUA on the cleared spot market and about 19 million EUA bilaterally settled through the LEBA-Brokers (OTC).

In July 2017, a total of about 92 million allowances were auctioned by Member States on the primary market as spot contracts. With respect to the relevant total market for EUA, around 19 percent of the traded volume was related to auctions.

The figure below illustrates the trading volumes separately for different market segments based on calendar weeks (CW). In this weekly view, the LEBA data are not included as they are only published on a monthly basis.

Figure 3: Trading volumes on the primary and secondary market in July 2017 (EUA)

The figure below illustrates the trading volumes separately for different market segments based on calendar weeks (CW). In this weekly view, the LEBA data are not included as they are only published on a monthly basis.

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1. All emission allowances (EUA) of the third trading period traded on the spot and futures markets on the ICE/ECX, EEX, CME/NYMEX and Nasdaq OMX exchanges are considered. Transactions completed directly on the stock exchange (screen traded) or those bilateral transactions that at least used the stock exchange clearing mechanism are included. The EUA spot contracts auctioned in July 2017 are also considered. As far as data on OTC volumes from bilateral trading activity (i.e. off-exchange) is available, it is included in the analysis. Option contracts are not involved.

2. LEBA is an association of large brokerage firms active in the trading of energy commodities (including EUA). Their monthly volume reports also include bilaterally settled contracts that were not registered on clearing platforms. The data are not broken down into futures-/spot-contracts. Moreover, since the volumes are only available as monthly aggregated values, the data were taken into account only in Figure 5, but not in Figure 3.
Figure 4: Auction volumes on the primary market in July 2017 (EUA)

The following chart shows the development of the monthly EUA trading volumes on the primary and secondary market over the past 12 month before the current reporting month. The sharp rise in OTC volumes in the current year, which is highly disproportionate compared to the overall market, is remarkable. This is reflected in a growing share of this segment in the total market volume (see also Table 3). In the first seven month of the current year, the total market volume of approximately 3.63 billion EUA was about 9.3 percent below the previous year’s figure (January to July).
Figure 5: Trading volumes on the primary and secondary market over the past 12 month (EUA)

Table 3: Market shares of the various trading segments (EUA)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary market</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUA-Auctions (Spot)</td>
<td>18.9 %</td>
<td>17.6 %</td>
<td>15.9 %</td>
<td>11.3 %</td>
</tr>
<tr>
<td>Secondary market</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUA-Futures (cleared)</td>
<td>69.9 %</td>
<td>70.7 %</td>
<td>69.5 %</td>
<td>79.2 %</td>
</tr>
<tr>
<td>EUA-Spot (cleared)</td>
<td>7.2 %</td>
<td>7.6 %</td>
<td>5.5 %</td>
<td>4.3 %</td>
</tr>
<tr>
<td>LEBA EUA OTC</td>
<td>4.0 %</td>
<td>4.2 %</td>
<td>9.1 %</td>
<td>5.2 %</td>
</tr>
</tbody>
</table>

Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, LEBA, DEHSt
4.2 Trading Volume EUAA

In July 2017 no aviation allowances (EUAA) were traded on the secondary market. Also no EUAA were auctioned on the primary market during the reporting period. Further information on the EUAA auction calendars is available on the website of the European Commission.

4.3 Clearing Prices and Price Development on the Secondary Market

Reference prices from the most liquid trading venues served as appropriate benchmarks for evaluating the auction clearing prices achieved on the EUA-spot auctions. The reference contract for the auctions is the daily future traded on the London ICE or the EEX EUA spot contract. The product specifications are comparable with the spot-product of the auctions. The trade price immediately before the end of the bidding period was used as a reference price. If no trades take place immediately before the end of the bidding period, the last best bid was used as a reference price (see also Info box below).

Info Box: Reference Prices

In regular exchange trading (secondary trading), participants enter their buying and selling requests (bids and asks) into an order book which is constantly updated. As in auctions, such buying bids in secondary trading include quantity and price limits. The price limit is the highest price a buyer is prepared to pay for the purchase of an allowance. Sellers can also put a price limit on their bid, i.e. a minimum price per allowance sold.

The order book is open to inspection by any participant. It shows the current highest purchase offer (best bid) and the lowest sales offer (best ask) with the relevant quantities. Trading occurs where best bid and best ask overlap. Trading price records finally show the price limits where supply equals demand.

Table 4 shows the relative deviations of the auction clearing price from the secondary market. The deviation on each EUA-auction date just before the end of the bidding period (11 a.m. CET) varied over the reporting period between €-0.04 (-0.78 percent) and +€ 0.01 (+0.19 percent).

For a mean value analysis, the arithmetic mean of the absolute values of individual deviations over the reporting period is calculated. The average deviation from the last best bid was € 0.03 or 0.57 percent averaged over all dates.

Table 4: Auctions and deviations from secondary market prices in July 2017 (EUA)

<table>
<thead>
<tr>
<th>Date</th>
<th>Contract</th>
<th>Auction price</th>
<th>Deviation from secondary market</th>
<th>Absolute</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/07/2017</td>
<td>EUA Spot 3rd TP</td>
<td>€ 5.24</td>
<td>*€ 0.01</td>
<td>0.19 %</td>
<td></td>
</tr>
<tr>
<td>14/07/2017</td>
<td>EUA Spot 3rd TP</td>
<td>€ 5.27</td>
<td>*€ -0.04</td>
<td>-0.75 %</td>
<td></td>
</tr>
<tr>
<td>21/07/2017</td>
<td>EUA Spot 3rd TP</td>
<td>€ 5.23</td>
<td>**€ -0.03</td>
<td>-0.57 %</td>
<td></td>
</tr>
<tr>
<td>28/07/2017</td>
<td>EUA Spot 3rd TP</td>
<td>€ 5.06</td>
<td>*€ -0.04</td>
<td>-0.78 %</td>
<td></td>
</tr>
<tr>
<td>Mean absolute deviation</td>
<td></td>
<td></td>
<td>€ 0.03</td>
<td>0.57 %</td>
<td></td>
</tr>
</tbody>
</table>

Source: ICE, EEX, Thomson Reuters Eikon, DEHSt
* best bid ICE Daily Future
** last trade ICE Daily Future

3 All aviation allowances (EUAA) of the third trading period traded on the spot and futures markets on the ICE/ECX and EEX exchanges are considered. Transactions completed directly on the stock exchange (screen traded) or those bilateral transactions that at least used the stock exchange clearing mechanism are included.
The following figure shows an overview of the price development for emission allowances in the London lead market. In addition to the daily futures the development of futures for December delivery of the current year is also shown (so-called „front-december future“). Rather than following the common practice of considering only settlement prices, our analysis takes into account all trades completed at the exchanges during the reporting period.\(^4\) The following graphic is based on volume-weighted average trading prices (VWAP), which fluctuated in an interval between around € 5.00 to € 5.60\(^5\) in July 2017.

Figure 6: ICE secondary market prices and EEX auction clearing prices (EUA)

5 Implementation of Valid Regulations

5.1 Surveillance Report by HÜSt

In order to guarantee above-board market activities are free of manipulation on the EEX continuous surveillance is conducted by an independent Market Surveillance Office (Handelsüberwachungsstelle, HÜSt) as required under German law. HÜSt reports to the DEHSt on the results of its surveillance activities through regular internal reports. HÜSt reported on auctions in July 2017 as follows (excerpt):

“Within their surveillance for the auctioning of emission allowances on behalf of the German Environment Agency at the EEX in July 2017 the Market Surveillance Office of the EEX could not detect any irregularities and especially no behaviour of bidders that was targeted at manipulating the auction price. “

\(^4\) Settlement prices are determined by the exchanges at the end of the trading day. Hence, they only reflect trade activity immediately before closure of the exchange and are, thus, not always an adequate reflection of the prevailing intra-day prices in the secondary market.

\(^5\) The volume-weighted average prices (VWAP) for the ICE EUA front-december future and the ICE daily future contract is based on data from Thomson Reuters Eikon.
5.2 Fair and Open Access
The implementation of the provisions of the EU Auctioning Regulation guarantees a fair and open access for all auction participants at EEX. Current access options can be found at EEX Website (Access).

More information about the auction process is also available on the EEX auction hotline. EEX can be reached by phone from Mondays to Fridays from 8:00 a.m. to 6:00 p.m. CET at +49 341 2156-331 or by e-mail at auctions@eex.com.

5.3 Auction Result Publication
All auction results and accompanying data were made publicly available during the reporting period within a 15-minute time window directly linked to the respective auction at EEX Website.

5.4 Other Events
There are no matters relating to the implementation of the existing rules to be reported during the reporting period. The current regulations can be downloaded from EEX Website (Regulations).