Auctioning

German Auctioning of Emission Allowances
Periodical Report: First Quarter 2015
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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 Federal 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 2015 auction calendar is published on the EEX website.

The following tables summarise the key data of the German auctions on the EEX in 2015:

<table>
<thead>
<tr>
<th>2015</th>
<th>Third trading period EUA spot contracts</th>
<th>Third trading period EUAA spot contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auction product</td>
<td>Third trading period EUA spot contracts</td>
<td>Third trading period EUAA spot contracts</td>
</tr>
<tr>
<td>Period</td>
<td>09/01/2015 to 11/12/2015</td>
<td>25/02/2015 and 07/10/2015</td>
</tr>
<tr>
<td>Auction volume entire year</td>
<td>143,893,500 EUA</td>
<td>2,229,000 EUAA</td>
</tr>
<tr>
<td>Auction volume per auction</td>
<td>3.198 million EUA</td>
<td>1.4475 million EUA on 25/02/2015</td>
</tr>
<tr>
<td>Auction frequency</td>
<td>Weekly (Fridays, 09:00 to 11:00 a.m. CET)</td>
<td>On 25/02/2015 and 07/10/2015 (09:00 to 11:00 a.m. CET)</td>
</tr>
<tr>
<td>Bid volume</td>
<td>500 EUA/EUAA</td>
<td></td>
</tr>
<tr>
<td>Auction mode</td>
<td>Single-round, uniform-price procedure with a closed order book</td>
<td></td>
</tr>
</tbody>
</table>

1 Overview

1.1 First Quarter of 2015

Between January and March 2015, 12 auctions of emission allowances (EUA) of the third trading period and one auction of aviation allowances (EUAA) were carried out for Germany at the EEX.

In the 12 EUA-auctions 38,376,000 EUA with a total value of €263,994,900 were auctioned. This results in a volume-weighted average price per allowance of €6.88 (+5 percent compared to the previous quarter). Thus, this was the highest average price since the fourth quarter of 2012. The deviations of the clearing prices from the current prices on the lead market fluctuated between -0.63 and +0.45 percent (see also Section 3.3).

Overall, valid bids totaling about 124 million allowances were entered into trading system across the 12 auction dates. Thus the average cover ratio in the reporting period was 3.24 (see also Section 2.2). The average participation number of 18 bidders was well about the level of the previous quarter (14). This also applies to the average number of 14 (11) successful bidders (see also Section 2.1).

The following table gives an overview of the most important auction figures from the EUA-auctions performed during the reporting period.
In addition, 1,447,500 aviation allowances (EUAA) with a total value of €10,639,125 were auctioned for Germany on 25/02/2015. The auction price for the 6 successful bidders was €7.35. Overall, 9 bidders with valid bids totaling about 4 million allowances participated in the auction. The next German EUAA-auction will take place on 07/10/2015.

### 1.2 Overview of the entire year 2015

In the first three month of the current year a total of 39,823,500 EUA and EUAA were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of €6.90. These overall figures are subdivided into 38,376,000 EUA with a total value of €263,994,900 (average price €6.88) and 1,447,500 EUAA with a total value of €10,639,125 (average price €7.35).

The amount of emission allowances to be auctioned by Germany in 2015 totals 143,893,500 EUA and 2,229,000 EUAA. Taking into account the total annual amount, around 27 percent of the EUA-auction budget and 65 percent of the EUAA-auction budget for 2015 has been auctioned to date.

The following table summarises the auction results on a monthly basis.
Table 2: Overview of the entire year 2015

<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></td>
<td>EUA</td>
<td>12,792,000</td>
<td>47,570,500</td>
<td>*3.72</td>
<td>*18</td>
<td>*13</td>
<td>€6.88</td>
<td>€88,040,940</td>
</tr>
<tr>
<td></td>
<td>EUAA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>EUA</td>
<td>12,792,000</td>
<td>43,920,000</td>
<td>*3.44</td>
<td>*18</td>
<td>*15</td>
<td>€7.12</td>
<td>€91,015,080</td>
</tr>
<tr>
<td></td>
<td>EUAA</td>
<td>1,447,500</td>
<td>4,001,500</td>
<td>2.76</td>
<td>9</td>
<td>6</td>
<td>€7.35</td>
<td>€10,639,125</td>
</tr>
<tr>
<td></td>
<td>EUA</td>
<td>12,792,000</td>
<td>32,693,000</td>
<td>*2.56</td>
<td>*19</td>
<td>*15</td>
<td>€6.64</td>
<td>€84,938,880</td>
</tr>
<tr>
<td></td>
<td>EUAA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| EUA   | 38,376,000 | 124,183,500 | *3.24 | *18 | *14 | €6.88 | €263,994,900 |
| EUAA  | 1,447,500   | 4,001,500   | 2.76  | 9   | 6   | €7.35 | €10,639,125  |

| Total  | 39,823,500 | 128,185,000 | **3.22** | *18 | *13 | **€6.90** | €274,634,025 |

Source: EEX, DEHSt
* Average
** Volume-weighted average

2 Bidder Participation

2.1 Participation

The number of participants in the German EUA-auctions in the first quarter averaged across all dates was 18 bidders. The average number of successful bidders was 14. Participation in the auctions fluctuated between 16 and 22 bidders during the reporting period. The number of successful participants ranged from 10 to 17. There was no such auction where all participating bidders were successful. The following figure illustrates EUA-auction participation over time.

Figure 1: Number of participating and successful bidders per auction date (EUA)
With 9 bidders, the participation in the aviation allowances auction on 25/02/2015 was well below the average participation in the EUA-auctions. However, it has to be noted that the usability of EUAAs for ETS compliance is limited to aircraft operators, whereas EUAs can be used by all operators subject to emissions trading.

### 2.2 Volume Demand

During the reporting period, the aggregated bid volumes per EUA-auction date fluctuated from 5 to 19.7 million allowances. Overall, valid bids totaling about 124 million allowances were entered into trading system in the first quarter. The resulting cover ratios during the reporting period ranged between 1.58 and 6.17 (3.24 on average).

The cover ratio in the EUAA auction on 25/02/2015 was 2.76 and thus within the fluctuation range of the cover ratios in EUA auctions. The figure below summarises the results of each EUA-auction date.

![Figure 2: Auctioned and bid volume and cover ratio (secondary axis) for each auction date (EUA)](image)

Source: EEX, DEHSt

Thus, the average bid volume per EUA-auction participant in the first quarter was about 560,000 allowances. The average volume awarded to each successful bidder was about 230,000 allowances. In the EUAA auction on 25/02/2015 the average bid volume per auction participant was about 450,000 allowances. The average volume awarded to each successful bidder was about 240,000 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).
3 Auctions and the Secondary Market

3.1 Trading Volume EUA

In the first quarter of 2015, a total of 38.4 million EUA were auctioned at the EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 1.81 billion EUA.\(^1\) Thus, the total market trading volume was roughly at the level of the previous quarter. This market volume was divided into approximately 230 million allowances which were completed as contracts for immediate delivery (spot) and about 1.58 billion allowances for delivery in the future (futures). Thus, about 87 percent of the traded volume was handled on the dominant futures market. The figure below illustrates the trading volumes separately for spot and futures segments based on calendar weeks (CW).

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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, CME/NYMEX, EEX 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 the first quarter of 2015 are also considered. Option contracts are not involved.
In the first quarter of 2015, a total of about 168 million allowances were auctioned by Member States on the primary market as spot contracts. On the spot secondary market about 61 million allowances were traded. This means that around 73 percent of traded spot contracts have been purchased in primary market auctions. With respect to the relevant total market for EUA, around 9 percent of the traded volume was related to auctions.

Figure 4 shows the trading volume in the spot secondary market and the auction volumes on the primary market per calendar week (CW). In addition to the German auctions, aggregated auction volumes of other EU Member States are also included in the figure.

Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters, DBHSt
* CW1: 29/12/2014-02/01/2015; CW13: 23/03/2015-27/03/2015
In the first quarter of 2015, a total of 1.7 million aviation allowances (EUAA) were traded on the secondary market (the trading volume in CW 8 is graphically hardly visible due to the axis scaling in the diagram below). During the reporting period, a total of about 7.9 million EUAA were auctioned by Member States on the primary market as spot contracts that are assigned to the 2013 and 2014 EUAA auction budget. Further information on the distribution of EUAA auction volumes between calendar years is available on the website of the European Commission.

Figure 5 shows the trading volume in the secondary market and the auction volumes on the primary market per calendar week (CW).

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2 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.
3.3 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 futures traded on the London ICE, whose 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).

Due to the comparatively very low liquidity on the benchmark secondary market for EUAA (see Section 3.2) no evaluation of the EUAA auction price on 25/02/2015 is made in this report.

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 3 shows the relative deviations of the clearing price from the London lead market. The deviation on each auction date just before the end of the bidding period (11 a.m. CET) varied over the reporting period between -€0.04 (-0.63 percent) and +€0.03 (+0.45 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 0.27 percent or €0.02 averaged over all dates.

Table 3: Auctions and deviations from secondary market prices in the first quarter of 2015 (EUA)

<table>
<thead>
<tr>
<th>Date</th>
<th>Contract</th>
<th>Clearing price</th>
<th>Deviation from ICE Daily Future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Absolute*</td>
</tr>
<tr>
<td>09/01/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.71</td>
<td>*€0.02</td>
</tr>
<tr>
<td>16/01/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€7.05</td>
<td>*€0.01</td>
</tr>
<tr>
<td>23/01/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.81</td>
<td>*€0.03</td>
</tr>
<tr>
<td>30/01/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.96</td>
<td>*€0.01</td>
</tr>
<tr>
<td>06/02/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.92</td>
<td>*€0.02</td>
</tr>
<tr>
<td>13/02/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€7.35</td>
<td>*€0.02</td>
</tr>
<tr>
<td>20/02/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€7.26</td>
<td>*€0.01</td>
</tr>
<tr>
<td>27/02/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.93</td>
<td>*€0.02</td>
</tr>
<tr>
<td>06/03/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.70</td>
<td>*€0.01</td>
</tr>
<tr>
<td>13/03/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.26</td>
<td>*€0.04</td>
</tr>
<tr>
<td>20/03/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.70</td>
<td>*€0.03</td>
</tr>
<tr>
<td>27/03/2015</td>
<td>EUA Spot 3rd TP</td>
<td>€6.90</td>
<td>*€0.00</td>
</tr>
</tbody>
</table>

Mean absolute deviation: €0.02, 0.27%

Source: ICE, EEX, Thomson Reuters, DEHSt

* best bid ICE Daily Future

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. The following graphic is based on volume-weighted average trading prices (VWAP), which fluctuated in an interval between €6.42 to €7.75 in the first quarter of 2015.

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3 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.

4 The volume-weighted average price (VWAP) for the ICE EUA Dec15 futures is published on a daily basis by the ICE. The VWAP for the ICE daily future contract is based on the calculations of Thomson Reuters.
Figure 6:  ICE secondary market prices and EEX auction clearing prices (EUA)

4 Implementation of Valid Regulations

4.1 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 the first quarter of 2015 as follows (excerpt):

"Within their surveillance for the auctioning of emission allowances on behalf of the Federal Environment Agency at the EEX in January, February and March 2015 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."

4.2 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 email at auctions@eex.com.
4.3 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 (2015 auction results).

4.4 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).