

# EU derivatives markets — a first-time overview

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This article provides first-time data on the EU interest rate, credit, equity, commodity and foreign exchange derivatives markets, based on weekly available EMIR data. The study provides for the first time an overview of the size and structure of EU derivatives markets by aggregating data across all six trade repositories authorised in the EU, complementing existing work and taking a broad approach by comprehensively considering the different markets. Trade repositories are an extensive source of information on derivatives including bank and non-bank entities. Information on the size of the different derivative markets, both in terms of number of transactions and gross notional amount outstanding, is reported and measures of market participants' market concentration are computed. Finally, this article shows the shares of derivative transactions that occur within the EEA, as opposed to cross-border transactions with non-EEA counterparts, as well as the breakdown between over-the-counter and exchange-traded derivatives.

## Introduction

In 2009, G20 leaders committed to increase transparency on derivatives markets by prescribing mandatory reporting of derivatives contracts. This took place against the background of the role played by credit derivatives in particular in the financial crisis and the transparency related to these instruments.

In the EU, the G20 commitment translated into the EMIR Regulation, Article 9 of which states that in the EU "Counterparties and CCPs shall ensure that the details of any derivative contract they have concluded and of any modification or termination of the contract are reported to a trade repository".<sup>2</sup>

EMIR reporting requirements came into force in February 2014, and given the complexity of derivatives products it took a great deal of work to put the requirements into practice and ongoing

effort to improve data quality by the industry and regulators.

This article now provides for the first time an overview of the size and structure of EU derivatives markets based on a complete set of EMIR data, i.e. by aggregating data across all six trade repositories authorised in the EU, and adds to the already existing work both at EU level<sup>3</sup> and globally<sup>4</sup>. In line with the BIS approach, the article is not limited to one specific class of derivatives, but takes a broad approach by investigating - in addition to credit derivatives - interest rate, equity, foreign exchange and commodity products as well.

By combining data from all six trade repositories authorised in the EU,<sup>5</sup> the data provides uniquely comprehensive coverage for the EU and complements existing market statistics, such as the BIS Semi-annual and Triennial derivatives statistics, which are based on surveys of

<sup>1</sup> This article was authored by Yanis El Omari, Martin Haferkorn and Carsten Nommels.

<sup>2</sup> Regulation (EU) No 648/2012 of the European Parliament and the Council of 4 July 2012 on OTC derivatives central counterparties and trade repositories.

<sup>3</sup> ESRB, 2016, Occasional Paper Series, No. 11.

<sup>4</sup> Global guidance on the harmonisation of data elements reported to trade repositories has been developed by the Committee on Payments and Market Infrastructures (CPMI) and International Organisation of Securities Commissions (IOSCO). Similarly, in 2016, the Financial Stability Board published two reports on the

implementation of key aspects of reforms to the over-the-counter (OTC) derivatives market.

<sup>5</sup> The authorised trade repositories are: DTCC Derivatives Repository Ltd. (DTRL), Krajowy Depozyt Papierow Wartosciowych S.A. (KDPW), Regis\_TR S.A. (REGIS), Unavista Limited (Unavista), CME Trade Repository Ltd. (CME TR), ICE Trade Vault Europe Ltd. (ICE TVEL). In July 2017 Bloomberg Trade Repository Limited was authorised. See ESMA List of registered trade repositories.

members or derivatives dealers<sup>6</sup>. The data reported by ISDA is another source of information on global interest rate and credit derivative markets.<sup>7</sup>

Trade repositories are an extensive source of information on derivatives and a means of increasing completeness, as their data is very detailed and coverage comprises all types of counterparties to a derivative contract, including bank and non-bank entities. This article offers high-level indications of market size and composition across derivatives markets in the EU. Differently, previous literature used EU TR trade state data from a single TR and/or focusing on a specific derivatives market, such as the interest rate derivatives or CDS markets. Abad et al. (2016) looked at the interest rate swap, credit default swap and foreign exchange markets in the EU using DTCC data. Ali et al. (2016), Brunnermeier et al. (2015), D'Errico et al. (2016) used DTCC data to analyse the EU CDS market, and D'Errico and Roukny (2017) studied compression mechanisms on the EU CDS market, while Kenny et al. (2016) analysed the role of special purpose vehicles (SPV) in the Irish CDS market using EMIR data across all six trade repositories authorised in the EU.

A different strand of literature uses transaction reports (trade activity reports): Benos et al. (2013) analyse CDS transactions using DTCC data; Benos et al. (2016) use transactional data from the USD and EUR segments of the plain vanilla interest rate swap market, while Cielinski et al. (2017) analyse the effects of the Swiss-Franc depegging using OTC FX data provided by DTCC.

This article begins by describing the data available and the necessary steps to obtain an EU-wide picture of derivatives markets. It goes on to provide some basic descriptive statistics on the size of and participants in interest rate, credit, equity, commodity and foreign exchange derivatives markets.

## Data description

The subsequent analysis is based on trade state reports on 24 February 2017 from the six trade repositories authorised in the EU (DDRL, KDPW, REGIS, UnaVista, CME TR and ICE TVEL). Trade state data refer to the most updated values of all the derivative contracts with open interest at the end of a given day. The raw data represent a snapshot of all derivative contracts open at the end of the day in the EU.<sup>8</sup>

Following pre-processing of the data, cleaning procedures were applied with respect to transactions and the counterparties involved. Regarding transactions, the double reporting regime for intra-EU derivatives transactions under EMIR (i.e. both buyer and seller have to report the transaction) requires as a first step the identification and subsequent removal of duplicate records. This was carried out as follows:

- If only one of the counterparties involved is an EEA entity, no double reporting obligation exists. Consequently, these records did not require deduplication.
- By contrast, only one of the records was used for each pair, as identified by matching reports for both the trade ID and the respective counterparty IDs.
- Lastly, wherever no matching second record existed but there was a double reporting obligation, the notional amount was halved.

Second, the reported notional amounts were checked for validity. Records with values that could not be converted to a numeric value were excluded. The notional amounts of the remaining records were converted to EUR using ECB exchange rates on 24 February 2017. Following this conversion, outliers were removed as follows:

- transactions with a notional value equal to zero (entries displaying negative notional values are considered in absolute terms);
- entries with log notional value four standard deviation above the mean.<sup>9</sup> This accounts for the different characteristics of each asset class and its usage form.

<sup>6</sup> The BIS publishes a set of statistics on ETD and two sets on OTC derivatives markets. For more information: [http://www.bis.org/statistics/about\\_derivatives\\_stats.htm](http://www.bis.org/statistics/about_derivatives_stats.htm). See also Abad et al. (2016) for a description of the BIS data and its comparison to data collected under EMIR.

<sup>7</sup> <http://www.swapsinfo.org/charts/derivatives/notional-outstanding>.

<sup>8</sup> Trade state reports for one day were made up of 15 different raw files amounting to 26 GB of data with

different types of files (csv, excel files, text files) and different reporting formats. Files with various numbers of columns and different field names had to be standardised before they could be merged and analysed.

<sup>9</sup> Mean is calculated by asset class distinguishing between compression (Y/N) and clearing status (Y/N).

Entities were identified at the Counterparty ID<sup>10</sup> level and not aggregated at the group level. In doing so, we introduce a small inaccuracy for concentration measures, as each subsidiary of a financial cooperation has its own Counterparty ID (e.g. in each jurisdiction or city). Aggregated measures such as notional amounts outstanding are not impacted, but concentration measures such as network degree centrality and the Herfindahl-Hirschman Index (HHI) are slightly underestimated.

Moreover, the asset classes studied here are identified either by the TRs themselves, as some of them provide reports by asset class, or according to the Product ID 1 and Product ID 2 fields, using CFI codes when necessary.<sup>11</sup> In the absence of a unique product identifier in Europe, however, this classification can lead to the misallocation of a specific product to the wrong asset class both from the point of view of the reporting entity or the data end-user. The derivative class “Other” has not been incorporated in the analysis below either. Another caveat lies in the fact that trade identifiers are not generated centrally or uniquely, with the same identifiers potentially used for more than one transaction. However, this can be mitigated by relying on information on other transaction characteristics. In addition to the trade ID, for example, the counterparty IDs and notional amounts could also be used to identify transactions. There may still be some unidentified duplicated transactions or different transactions erroneously considered as single ones. Any form of aggregation at the counterparty identifier level has been left for future examination. This is of no consequence for the aggregated notional figures but inevitably leads to overestimation of the market size in terms of the number of participants or underestimation of the concentration measures.

These procedures are a pre-condition for carrying out analysis using trade state data aggregated across the six authorised TRs. They have now

been implemented in an automated manner and will allow monitoring of derivatives markets based on time-series data going forward.

## Indicators

The indicators developed describe market size in terms of number of transactions and gross notional amounts outstanding as well as concentration indicators. For concentration indicators, the analysis uses participants' market share as measured by the sum of all their gross notional positions in euro. To evaluate the degree of concentration for a specific asset class, this study makes use of the HHI, which reflects the concentration of a given market and is normalised between zero and one. To provide indications of the degree of concentration, the analysis takes as a reference the HHI levels defined in the EC Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (Section III). Concentration levels with a HHI below 0.10 are unlikely to raise competition concerns.<sup>12</sup> As an additional measure of concentration, we use network degree centrality for each asset class. This measure builds a network level centrality score based on the individual degrees or number of distinct bilateral relationships between the individual counterparties in the network. It varies between zero and one, with one representing the highest possible concentration level for a network, i.e. a network where one big participant would be the unique counterparty to all the other counterparties.

## Interest rate derivatives

### Participants

For interest rate derivatives, 251,916 different counterparty identifiers were reported. Among these, nine were CCPs authorised to offer services and activities in the EU. 11 were CCPs established in a third country, and an additional

<sup>10</sup> European Commission Delegated Regulation (EU) No 148/2013.

<sup>11</sup> Product ID 1/ID 2 are two mandatory fields used for identification of the asset classes. Product ID 1 can be an ISIN or Alternative Instrument Identifier (AII) code or one of the following: CO for commodity, CR for credit, CU for currency (foreign exchange in our analysis), EQ for equity, IR for interest rate, OT for others. Product ID 2 can be either blank, a CFI code (ISO 10962 Classification of Financial Instruments Code) or one of the following: CD for contract for difference, FR for forward rate agreements, FU for futures, FW for forwards, OP for options, SW for swaps, OT for others. We used the product ID 1 as the asset class when it was one of the

following five: CO, CR, CU, EQ, and IR. For the rest we used the CFI code when provided in Product ID 2 to allocate the record to one of the five asset classes.

<sup>12</sup> Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings. Art 19 and Art 20 of the EC Guidelines refer to both levels and changes in the HHI following a merger. In this analysis, we consider levels only, as changes would not be applicable in the specific case.

339 were clearing members of either of these CCPs. The more than 250,000 remaining counterparties reflect the widespread use of interest rate derivatives; they include financial and non-financial counterparties, clients to a clearing member in the case of a cleared trade, or non-clearing-member brokers and their clients.

### Size of the market

The trade state reports record a total of 5.4mn open transactions amounting to a total notional value of around EUR 282tn, making interest rate derivatives the largest derivatives asset class in terms of gross notional amounts outstanding. As previously mentioned, this dataset complements other existing statistics. For example, in the case of interest rate derivatives ISDA reports USD 543.3tn globally on 24 February 2017. In its latest semi-annual survey, the BIS reports gross notional outstanding of USD 368tn for OTC interest rate derivatives at a global level for the end of 2016.<sup>13</sup> The differences with our dataset might also be due to the nature of the data, BIS and ISDA survey-based data collection. Differences in reported numbers can also be observed for the other asset classes.

6% and 94% of transactions were exchange-traded derivatives (ETD) and OTC derivatives transactions respectively. This compares to 14% ETD and 86% OTC in terms of notional, indicating a larger volume of standardised ETD transactions. It is worth noting that the average notional amount per transaction is much higher than for the other derivative categories. This is due to the character of IRDs, where a typical IRD used to hedge an interest rate risk with payments expressed in basis points will have a very high notional amount (V.12).

#### V.1

##### Interest rate derivatives

##### Mostly OTC transactions

	Number of transactions	% of total	Notional value	% of total
ETD	0.30	6	41	14
Trade with EEA	0.24	4	20	7
Trade with non-EEA	0.06	1	21	7
OTC	5.05	94	239.8	85
Trade with EEA	3.46	64	137	49
Trade with non-EEA	1.52	28	100	35

<sup>13</sup> The BIS compiles and publishes one set of statistics on ETD and two sets on OTC derivatives markets. For more information: [http://www.bis.org/statistics/about\\_derivatives\\_stats.htm](http://www.bis.org/statistics/about_derivatives_stats.htm)

Total	5.36	100	283	100
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Note: Number of transactions in millions of records. Notional value in EUR tn. Transactions for which the trading venues were not reported and transactions for which the "trade with non-EEA" field was not reported are only included in total numbers.

Source: ESMA

In both ETD and OTC markets, approximately half of the transactions measured by notionals take place between two EEA-based counterparties, while the remainder involve a counterparty based in another jurisdiction. This is in line with expectations, as interest rate derivatives often serve as a means of hedging interest rate payments across jurisdictions.

In terms of concentration, both the HHI and the network concentration measures indicate a relatively decentralised market. As interest rate derivatives cover a wide variety of needs for a broad set of economic actors/agents, this result is in line with expectations. Moreover, the often bilateral and bespoke nature of these agreements is reflected in the predominance of the OTC market segment. These numbers are in line with the HHI provided by the BIS which, although not directly comparable (HHI for interest rate swaps separated by currency for the BIS figures), are in the same order of magnitude (V.13).<sup>14</sup>

#### V.2

##### Interest rate derivatives

##### Relatively decentralised

	OTC	ETD	Overall
HHI			0.05
Degree centrality	0.07	0.16	0.07

Note: Market share of participants as measured by the sum of their gross notional positions in euro.

Source: ESMA.

## Credit derivatives

### Participants

Compared to interest rate derivatives, the number of participants in the credit derivative segment is much smaller, with only 9,829 unique counterparty identifiers reported. In total, six CCPs are active in the market – two of which are authorised in the EU, while the other four are established in third countries. In addition, 76 clearing members are active in this market segment. It is the smallest derivatives market in terms of the number of counterparties, as firms entering into credit derivative contracts are typically those with substantial financial hedging

See also Abad et al. (2016) for a description of the BIS data and how it compares to data collected under EMIR.

<sup>14</sup> <http://stats.bis.org/statx/srs/table/d7>.

needs. This is reflected in the lower number of small non-financial counterparties compared to other markets.

### Size of the market

The vast majority of trades were OTC (97% or 1.2mn transactions) whereas only 3% or 30,000 transactions were ETDs. In terms of notional value, the credit derivative markets totalled EUR 13.8tn. BIS reports USD 9.9tn of CDS contracts outstanding globally between dealers as at end-2016, and ISDA reports USD 10.5tn as at 24 February 2017. With regard to the EUR 13.8tn notional value in our data, 96%, or EUR 13.3tn, were attributable to the OTC segment, where CDS for instance are primarily traded. On the OTC side, more than 60% of transactions occur between an EEA and a non-EEA counterparty (in terms of both the number of transactions and notionals) (V.14).

V.3

Credit derivatives

#### Mostly OTC transactions

	Number of transactions	% of total	Notional value	% of total
ETD	0.03	3	0.5	4
Trade with EEA	0.003	0	0.3	2
Trade with non-EEA	0.03	2	0.2	1
OTC	1.18	97	13.3	96
Trade with EEA	0.41	34	4.5	32
Trade with non-EEA	0.77	63	8.8	64
Total	1.21	100	13.8	100

Note: Number of transactions in millions of records. Notional value in EUR tn. Transactions for which the trading venues were not reported and transactions for which the "trade with non-EEA" field was not reported are only included in total numbers.

Source: ESMA.

Based on the network centrality indicator, markets for credit derivatives are more concentrated than for interest rate derivatives. This is even more pronounced for OTC derivatives, which consist mainly of CDS contracts. These are characterised by a high degree of concentration at the counterparty level, which is in line with existing literature (Brunnermeier et al., 2015). The HHI is, however, only marginally higher than for interest rate derivatives despite a smaller number of counterparties (V.15).

V.4

Credit derivatives

#### High level of network centrality

	OTC	ETD	Overall
HHI			0.07
Degree centrality	0.44	0.24	0.43

Note: Market share of participants as measured by the sum of their gross notional positions in euro.

Source: ESMA.

## Equity derivatives

### Participants

For equity derivatives, 220,256 different counterparties were reported. Among market participants, 13 EU-based CCPs were present, as well as 13 third-country CCPs and 193 of their clearing members.

### Size of the market

In terms of the number of transactions, equity derivatives are the largest derivatives asset class with 16.8mn open transactions. Of these transactions, 12.5mn were OTC (80%) and 3.1mn were ETDs (20%). However, the order is different when considering notional amounts: EUR 15.3tn are OTC derivatives (43%), while EUR 20.2tn are ETDs (57%), again indicating the larger share of standardised transactions.

V.5

Equity derivatives

#### Mostly OTC transactions, larger amounts for ETD

	Number of transactions	% of total	Notional value	% of total
ETD	3.12	20	20	57
Trade with EEA	1.64	10	13	36
Trade with non-EEA	1.48	10	7	21
OTC	12.50	80	15	43
Trade with EEA	5.54	35	6	17
Trade with non-EEA	6.94	45	9	26
Total	15.62	100	35	100

Note: Number of transactions in millions of records. Notional value in EUR tn. Transactions for which the trading venues were not reported and transactions for which the "trade with non-EEA" field was not reported are only included in total numbers.

Source: ESMA.

Concentration levels are relatively low overall: between the levels observed in the rather concentrated credit derivative segment and the interest rate segment. This is in line with the BIS

concentration index for equity-linked options (V.16).<sup>15</sup>

V.6

Equity derivatives

**High-level concentration**

	OTC	ETD	Overall
HHI			0.06
Degree centrality	0.28	0.20	0.22

Note: Market share of participants as measured by the sum of their gross notional positions in euro.  
Source: ESMA.

Concentration levels and the relatively similar importance of OTC vs. ETD transactions are consistent with the very diverse nature of equity derivatives covering both standardised products such as exchange-traded futures or plain vanilla options as well as bespoke, bilaterally traded forwards and exotic options (V.17).

## Commodity derivatives

### Participants

305,685 different counterparty IDs were reported for the commodity asset class, which makes this category the largest in terms of market participants. That is not surprising given the widespread use of these contracts across industries and types of counterparties, notably non-financials. Overall, 10 EU CCPs and 11 third countries' CCPs were present in this market, as well as 149 clearing members (V.18).

V.7

Commodity derivatives

**Majority of ETD transactions**

	Number of transactions	% of total	Notional value	% of total
ETD	2.65	54	5	60
Trade with EEA	0.89	18	2	16
Trade with non-EEA	1.76	35	4	43
OTC	2.34	46	4	40
Trade with EEA	1.05	21	2	21
Trade with non-EEA	1.29	26	2	18
Total	5.03	100	9	100

Note: Number of transactions in millions of records. Notional value in EUR tn. Transactions for which the trading venues were not reported and transactions for which the "trade with non-EEA" field was not reported are only included in total numbers.  
Source: ESMA.

### Size of the market

Around five million open commodity derivatives transactions were reported, 54% of them ETD derivatives. Similarly, in terms of notional

amounts ETDs account for EUR 5.4tn (60%) of notional values compared to EUR 3.6tn (40%) for OTC. Once again, most of these transactions involve a non-EEA counterparty. The average notional transaction amount is lower than for the other asset classes, reflecting the wide use of commodity derivatives by small non-financial firms such as commodity producers managing their commodity price risk (V.19)

Comparatively high levels of concentration can be observed on the commodity derivatives market. Values for the HHI (0.16) and degree centrality – in particular for OTC derivatives – are the highest among all asset classes. This illustrates the nature of the commodity derivative markets, where many counterparties, including many non-financial corporations, interact with a few large brokers.

V.8

Commodity derivatives

**Comparatively high level of concentration**

	OTC	ETD	Overall
HHI			0.16
Degree centrality	0.46	0.16	0.44

Note: Market share of participants as measured by the sum of their gross notional positions in euro.  
Source: ESMA.

## Foreign exchange derivatives

### Participants

Nine EU and seven third-country CCPs, and 41 clearing members were among the 162,698 different counterparty IDs reported for foreign exchange derivatives.

### Size of the market

V.9

Foreign exchange derivatives

**Primarily OTC transactions**

	Number of transactions	% of total	Notional value	% of total
ETD	0.05	1	0.5	0
Trade with EEA	0.03	1	0.2	0
Trade with non-EEA	0.01	0	0.2	0
OTC	6.46	99	111.7	99
Trade with EEA	3.42	52	18.2	16
Trade with non-EEA	3.02	46	93.3	83
Total	6.52	100	112.3	100

Note: Number of transactions in millions of records. Notional value in EUR tn. Transactions for which the trading venues were not

<sup>15</sup> <http://stats.bis.org/statx/srs/table/d8>.

reported and transactions for which the “trade with non-EEA” field was not reported are only included in total numbers.  
Source: ESMA.

6.5mn transactions were open at the time of the analysis, almost all of them OTC. They totalled EUR 112tn, only EUR 475bn of which were exchange traded (V.20).

V.10

Foreign exchange derivatives

**Comparatively low levels of concentration**

	OTC	ETD	Overall
HHI			0.05
Degree centrality	0.11	0.22	0.11

Note: Market share of participants as measured by the sum of their gross notional positions in euro.  
Source: ESMA.

As regards concentration, we do not observe any significant level. Values for both the HHI (0.05) and degree-centrality are low overall, in line with the BIS figures. Interestingly, however unlike most other asset classes, degree-centrality is higher for EC than for OTC positions (V.21).

**Conclusion**

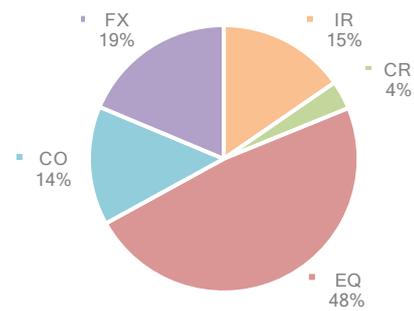
This article provides descriptive statistics from EU EMIR data for the first time, including an initial overview of the EU interest rate, credit, equity, commodity and foreign exchange derivatives markets. Data are based on mandatory reporting under EMIR and aggregated across all six trade repositories authorised in the EU. The data provide very comprehensive coverage of the EU derivatives markets, complementing other existing market statistics.

In terms of number of transactions, the equity derivatives market is the largest (48% of the total number of transactions reported), followed by foreign exchange products (19%), interest rate derivatives (15%), commodity derivatives (14%) and credit derivatives (4%) (V.22).

V.11

Number of transactions by asset class

**EQ predominant**



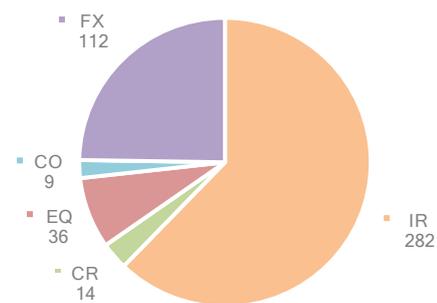
Note: share of the total number of transactions by asset class.  
Source: ESMA.

However, in terms of market size as measured by the value of gross notional amount outstanding, the picture looks different. Interest rate derivatives constitute the largest market (EUR 282tn), followed by foreign exchange derivatives (EUR 112tn). Equity, credit and commodity derivatives markets are much smaller (EUR 36tn, EUR 13.8tn and EUR 9.1tn respectively). Different average transaction sizes reflect the different uses made of the various types of derivatives. The typical IRD used to hedge an interest rate risk, with payments expressed in basis points, will thus have a very high notional, while equity or commodity derivatives linked to stocks or physical commodities will have smaller notionals on average (V.23).

V.12

Gross notional amounts outstanding by asset class

**IR predominant**



Note: Gross notional amount outstanding by asset class, in Eur tn.  
Source: ESMA.

In terms of market size, it is worth noting that the coverage of the EMIR dataset used here is based on mandatory regulatory reporting and is more comprehensive than coverage of the data reported by the BIS. The BIS Semiannual and Triennial derivatives statistics are based on surveys of members or derivatives dealers.<sup>16</sup> For

<sup>16</sup> The BIS compiles and publishes one set of statistics on ETD and two sets on OTC derivatives markets. For more information: [http://www.bis.org/statistics/about\\_derivatives\\_stats.htm](http://www.bis.org/statistics/about_derivatives_stats.htm)

See also Abad et al. (2016) for a description of the BIS data and how it compares to data collected under EMIR.

example, the gross notional amounts outstanding in the EU total EUR 13.8tn (of which EUR 13.3tn are OTC) for credit derivatives. This compares with USD 11.8tn of OTC derivatives outstanding globally as reported by big dealers to the BIS.

Derivatives markets also have very different market structures with, for example, more concentrated markets such as the commodity and credit derivatives markets. These tend to exhibit a core of central counterparties with large exposures and a periphery of smaller ones. Other markets are less concentrated, with a larger number of small counterparties. We also observe an important part of EU derivatives trading activity occurring with non-EEA counterparts.

Finally, the type of transaction varies significantly across asset classes, reflecting different degrees of contract standardisation. OTC transactions are predominant on FX, credit and interest rate derivatives markets, whereas there is a slight majority of ETD transactions on equity and commodity derivatives markets (V.24).

ESMA is thus taking advantage of newly available data in this area to complement existing literature and study focusing on the EU derivatives markets. However, this article is but a starting point, with substantial work yet to be carried out on enhancing data quality and on further market and statistical analysis. The above aspects are key priorities for ESMA in the coming years

V.13

ETD vs OTC

**Heterogeneous across asset classes**



Note: Execution type by asset class. Transactions for which the trading venue was not reported are not included. % of total.  
Source: ESMA.

## References

Abad, J., Aldasoro, I., Aymanns, C., D'Errico, M., and Rousova L., F., Hoffmann, P., Langfield, S., Neychey, M. and Roukny, T., 2016, "Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset", ESRB occasional paper No. 11.

Ali R., Vause, N. and Zikes, F., 2013, "Systemic risk in derivatives markets: a pilot study using CDS data", Bank of England Financial Stability Paper, 38.

Benos, E., Wetherilt, A. and Zikes F., (2013), "The structure and dynamics of the UK credit default swap market", Financial Stability Paper, 25.

Benos, E., Payne, R. and Vasios, M., (2016), "Centralising trading in interest rate swap markets: The impact of Dodd-Frank", Bank of England Staff Working Paper, 580.

Brunnermeier, M., Clerc, L., El Omari, Y., Gabrieli, S., Kern, S. *et al.*, 2015, "Assessing contagion risks from the CDS market", ESRB occasional paper No. 4.

Cielinska, O., Joseph, A., Shreyas, U., Tanner, J. and Vasios M., 2017, "Gauging market dynamics using trade repository data: The case of the Swiss franc de-pegging", Bank of England Financial Stability Paper, 41.

D'Errico, M., Battiston, S., Peltonen, T., and Scheicher, M., 2016, "How does risk flow in the credit default swap market?"

D'Errico, M., Roukny, T., 2017, "Compressing over-the-counter markets" Mimeo.

Kenny, O., Killeen, N., Moloney, K., 2016, "Network analysis using EMIR credit default swap data: Micro-level evidence from Irish domiciled special purpose vehicles (SPVs)", Working Paper, pp. 1–20.

