



**ESRB**

European Systemic Risk Board

European System of Financial Supervision

# ESRB work on EMIR data: analysis, research and challenges

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*Disclaimer: the views expressed in this presentation are solely those of the authors and do not necessarily represent the views of the ESRB or its member institutions.*

# Opacity and data gaps in the global financial crisis

**Complexity and opacity** impaired the way market participants and policymakers understood:

- market functioning and complex interactions at several levels
- systemic risk externalities

**Data and information gaps:**

- did not allow to obtain a full picture of the market and developments
- exacerbated loss of confidence compounding systemic stress

# G-20 leaders (Pittsburgh, 2009): “Turn the page” ...

*“...adopt a set of policies and reforms to meet the needs of the 21<sup>st</sup> century global economy”*

## **Make derivatives markets safer by**

- higher capital and margining requirements, clearing obligation, trading on exchanges/platforms
- **reporting of all details on derivatives transactions to trade repositories**

**European Market Infrastructure Regulation (EMIR)** implements this initiative in Europe

- Article 81 - Transparency and data availability: gives the ESRB access to the full EU-wide dataset

# EMIR data: the conceptual challenge

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- Financial systems: **complex, interconnected, adaptive** → mirrored by complexity in data
- Key to tackle these challenges: **interdisciplinary expertise**

# Cooperation with the research community

## EMIR Bridge Programme Get involved in our big data programme

Big data on derivatives contracts are at our fingertips. If you are an experienced policy expert or academic researcher, apply to take part in the EMIR Bridge Programme for Data Science and help us make the most of this wealth of information.

Deadline for applications: 23 April 2018

[EMIR Bridge Programme for Data Science](#)



# EMIR data: the technological challenge

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**100 million observations per day** (with more than 200 attributes)



**Terabytes** of data need to be **processed and analysed**



**Timeliness is key:** processing/analysis at  $t+2$



Development of **full-fledged big data IT platform** with high computing performance

Close collaboration with ESMA and ECB

# ESRB pioneered analysis of EMIR data

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- **First analysis** of the EU derivatives **market structure**: ESRB Occasional paper “*Shedding light on dark markets*” (2015/2016) – focused on IRS, CDS, FX derivatives
- **Focus analyses** (2016/2018) to underpin risk analysis and policy discussion (1 OP, 6 WP): e.g. *CDS usage, interest rate risk in banking, discriminatory pricing, central clearing, portfolio compression*
- **Now**: progressing developing **real time systemic risk indicators** and **maps** of the EU financial system interconnectedness – **how?**

# Published ESRB research using EMIR data

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- ESRB OP 11: *Shedding light on dark markets, 22.9.2016.*
- ESRB WP 72: *Clearinghouse-Five: determinants of voluntary clearing in European derivatives markets, 13.3.2018.*
- ESRB WP 62: *The demand for central clearing: to clear or not to clear, that is the question, 15.12.2017.*
- ESRB WP 61: *Discriminatory pricing of over-the-counter derivatives, 15.12.2017.*
- ESRB WP 58: *Syndicated loans and CDS positioning, 15.11.2017.*
- ESRB WP 54: *Networks of counterparties in the centrally cleared EU-wide interest rate derivatives market, 15.9.2017.*
- ESRB WP 44: *Compressing over-the-counter markets, 2.5.2017.*



# Shedding light on dark markets (ESRB OP 11)

Table 10

## Matrix of share of interactions between market participants, weighted by notional

Buy \ Sell	G16 Dealers	Banks	Other financials	ICPFs	Non-financial	Other	Total
<b>G16 Dealers</b>	29.5%	17.4%	7.1%	0.3%	4.2%	2.4%	60.9%
<b>Banks</b>	18.5%	1.9%	0.9%	0.0%	0.1%	0.0%	21.3%
<b>Other financials</b>	8.2%	1.1%	0.4%	0.0%	0.1%	0.1%	10.0%
<b>ICPFs</b>	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5%
<b>Non-financial</b>	4.4%	0.1%	0.2%	0.0%	0.0%	0.0%	4.6%
<b>Other</b>	2.5%	0.0%	0.1%	0.0%	0.0%	0.0%	2.7%
<b>Total</b>	63.5%	20.6%	8.6%	0.4%	4.4%	2.5%	100.0%

Note: "Other" includes Government, Central Bank, CCPs and empty or unidentified sectors. The red squares refer to the intensity of the respective sector-to-sector relationship.

Source: DTCC OTC credit derivatives single-name dataset (based on the processed 02/11/15 trade state report).

[https://www.esrb.europa.eu/pub/pdf/occasional/20160922\\_occasional\\_paper\\_11.en.pdf](https://www.esrb.europa.eu/pub/pdf/occasional/20160922_occasional_paper_11.en.pdf)

# A paradigm shift?

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## Four interrelated pillars

1. Availability and collection of **granular, timely and high quality data**
2. [Global] **data standardisation** (comparability, automatisaton in processing, ability to link different data sources)
3. New **technologies to improve efficiency in data processing and analysis** (finding '*needles in the haystacks*')
4. Ability to monitor developments across markets, instruments, and sectors **to build a system-wide view and to account for interconnectedness** ('*connecting the dots*')