EUROPEAN CENTRAL BANK
EUROSYSTEM

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An insight into the derivatives trading of firms in the euro area

9th IFC Conference on

Are post-crisis statistical initiatives completed?

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Overview

Why do firms decide to use financial derivatives?

Hedging against cash flow volatility by increasing "debt capacity" in a context of imperfect capital markets

Common cases in the literature:

- Reducing risk of financial distress[1]
- Reducing expected value of tax liabilities[2]
- Financing investment plans[3]

Our contribution:

- Exploratory analysis of EMIR transaction-level data on derivatives traded by NFCs focusing on euro area countries
- Research questions: Does firm size matter? Which types of firms use derivatives? Which firms prefer which types of derivatives?

[1] Mayers and Smith, 1982; Myers, 1984; Stulz, 1984; Smith and Stulz, 1985; Shapiro and Titman, 1998
[2] Smith and Stulz, 1985; Nance et al., 1993; Graham and Smith, 1999; Graham and Rogers, 2002
[3] Bessembinder, 1991, Froot et al., 1993

Data sources

Orbis Europe balance sheet data

- Firm-level data on annual balance sheets and other financial information
- Commercial data provider (Bureau van Dijk) collecting data from national offices in charge of collecting annual accounts in the respective country.
- About 86 million European firms. Data coverage varies across countries.

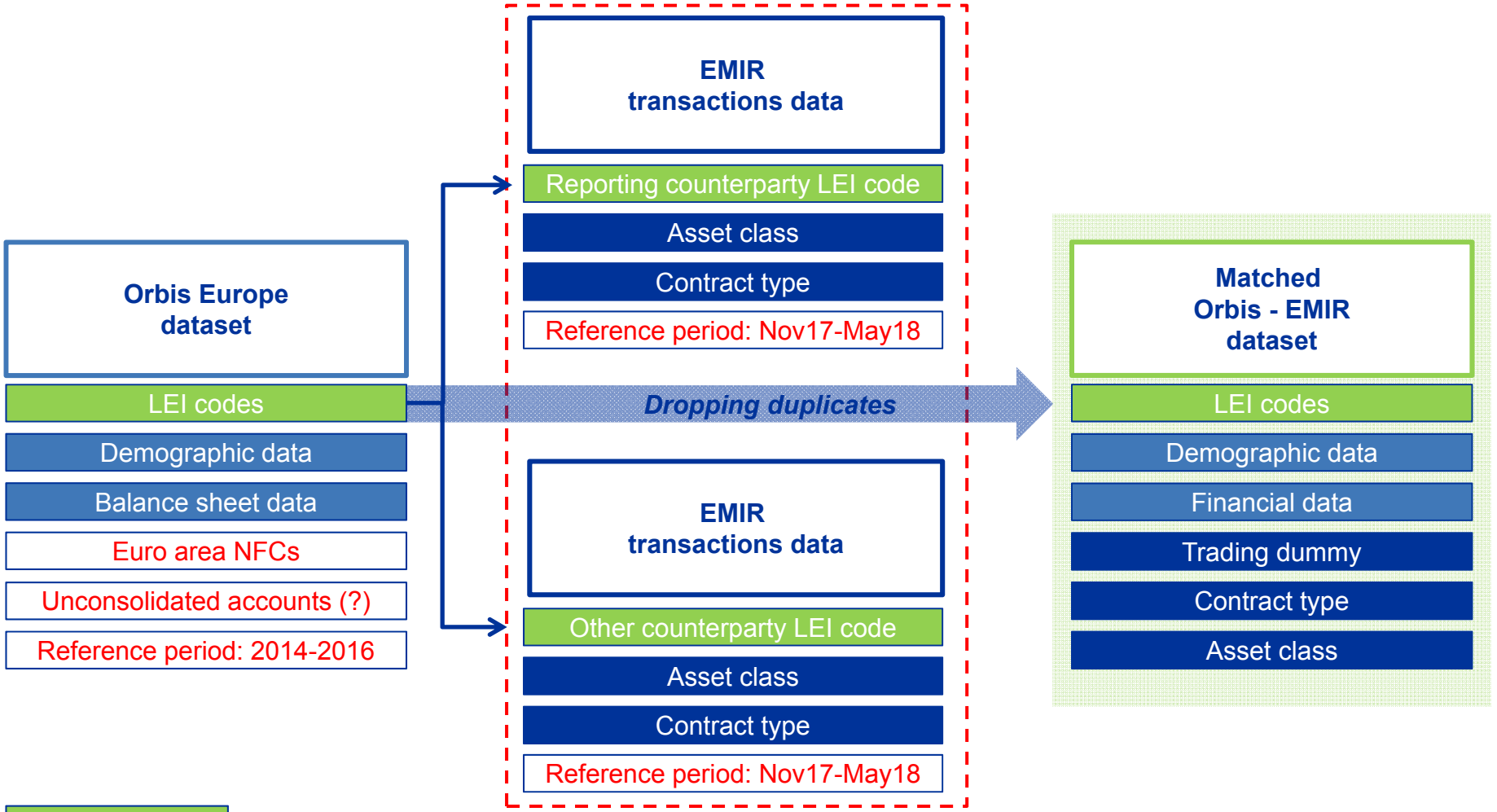
EMIR data

- Transaction-level derivatives data for all counterparties established in the euro area and all contracts where the reference entity is located within the euro area or where the reference obligation is sovereign debt of a euro area member.
- Collected by six Trade Repositories (TRs) under the European Market Infrastructure Regulation (EMIR) since February 2014 and shared with 60 competent authorities (including the ECB).
- All contract types (OTC and ETD) and instrument classes (equity, credit, interest rates, commodities, foreign exchanges).
- More than 120 reporting fields.
- “Double reporting regime” ensuring validation and consistency controls but standardisation problems (i.e. the lack of a global trade ID) generate data reconciliation issues.

Focus of the analysis

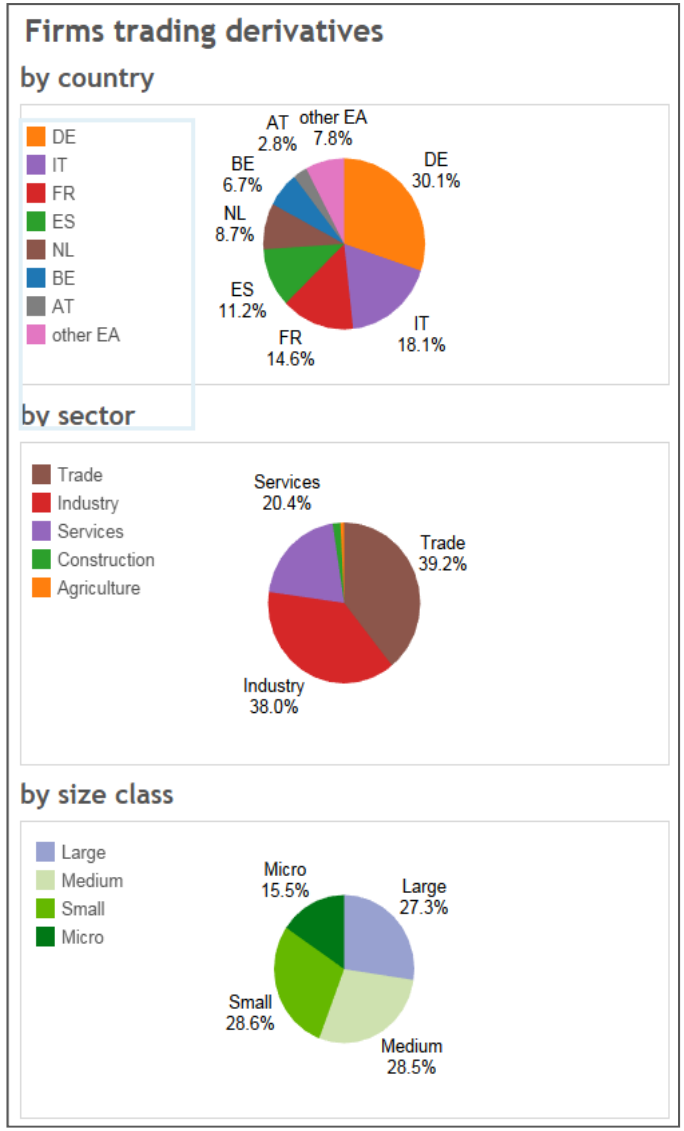
- EMIR data collected as of November 2017 (in compliance with the latest regulatory standards).
- Orbis data for firms identifiable with an LEI
- Qualitative information on derivatives usage by NFCs (use/no use, contract type, asset class).
- Timing considerations: Orbis (2014-2016 reports) – EMIR (Nov17-May18 new transactions)

Matching EMIR and Orbis



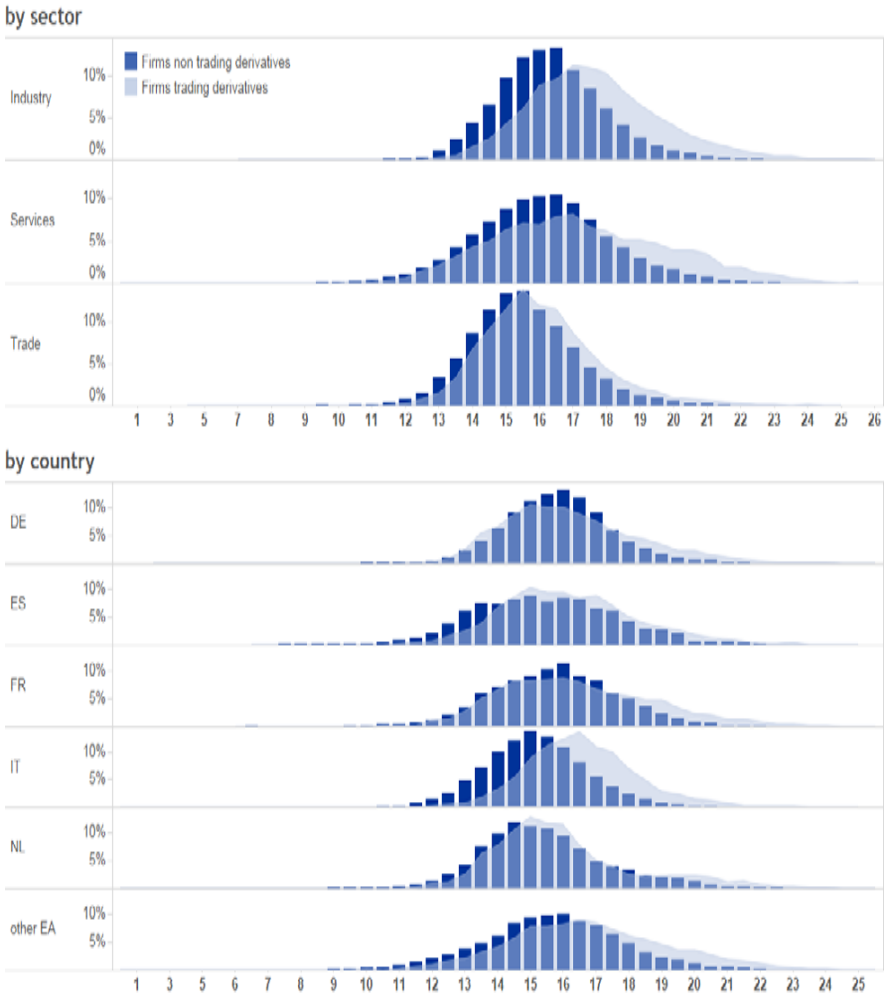
***56%** of euro area NFCs reported in EMIR can be matched with Orbis through the LEI code!*

An insight into euro area NFCs trading derivatives

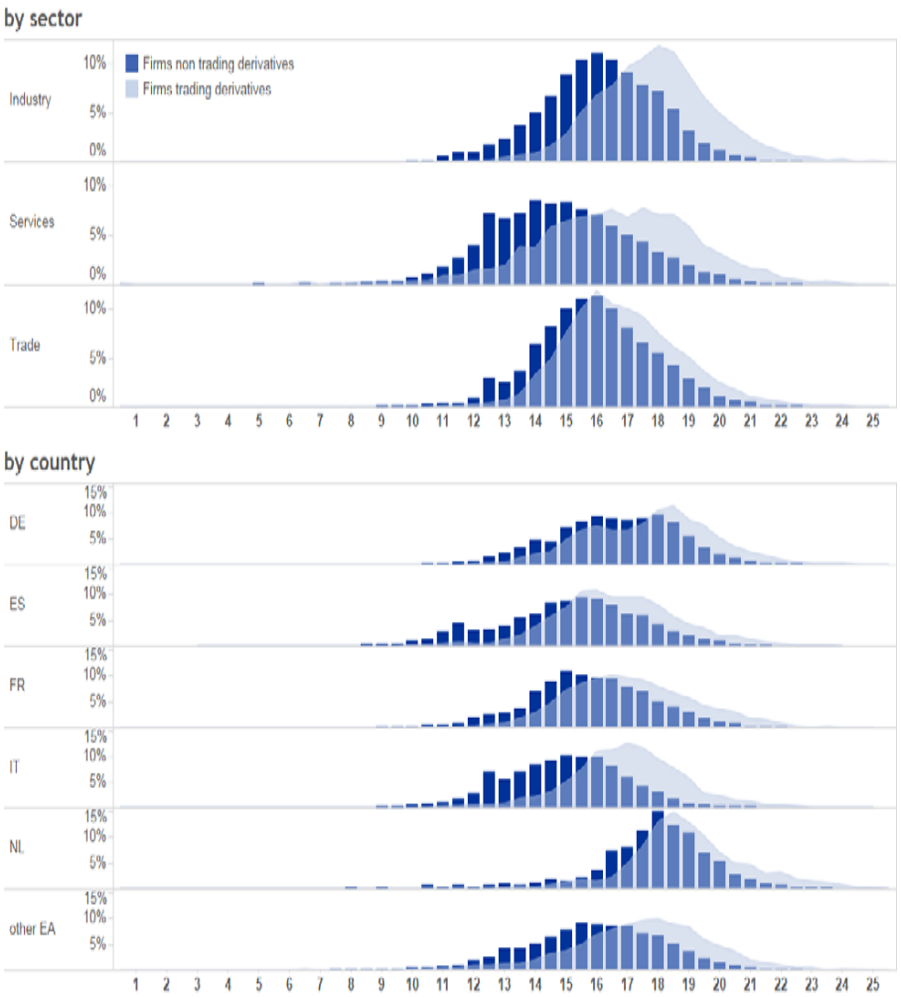


Firm size matters but the impact is different across countries and sectors

Total assets (natural log)



Turnover (natural log)



Variables	Trading odds ratio
Small	1.568***
Medium	2.058***
Large	4.205***
Country dummies	2.083***
Sector dummies	7.987***
Leverage and debt maturity	
debtequityratio	1.000
liabilitiesassetratio	1.000
ltdebteqratio	1.000
ltdebttotalassetsratio	0.439***
Liquidity	
currentratio	1.000
liquidityratio	0.996***
Solvency	
solvencyratio	1.003***
Profitability	
ebitdamargin	0.990***
ebitmargin	1.003***
profitmargin	1.008***
Capital/R&D investments	
capexpendituresturnoverratio	1.000
randdexpensesturnoverratio	0.534
capexpenditures salesratio	1.000
randdexpensessalesratio	1.105
marketbookratio	0.992
Exports	
exportrevenueratio	1.929***
intangbookratio	1.000
Constant	0.0289***
Observations	106,908
Pseudo R-squared	0.135

*** p<0.01, ** p<0.05, * p<0.1

Moving beyond firm size…

- Export-oriented (majority of firms in the sample use currency forwards)
- Short-term debt maturity
- Financially stable but also less liquid firms
- Mixed results on profitability
- Country and sector characteristics play a significant role

Variables	COMM odds ratio	CRD odds ratio	CURR odds ratio	EQUI odds ratio	INTR odds ratio
Small	0.805*	1.375		0.243***	0.925
Medium	1.590***	14.35**		0.180***	1.044
Large	3.865***	17.31**		0.433***	0.883
Country dummies	*	*		*	*
Sector dummies	*	*		*	*
solvencyratio	1.000	0.999		0.995***	1.000
ltdebttotalassetsratio	1.615***	0.518		1.628**	7.049***
exportrevenueratio	0.294***	0.359		0.320**	0.237***
ebitdamargin	0.996	0.997		1.002	1.027***
ebitmargin	0.996	1.032**		0.997	0.996
profitmargin	0.994**	0.968**		1.004	0.995**
liquidityratio	1.001	0.991		1.030***	0.988**
Constant	0.203***	0		0.0720**	0.391***
Observations	19,562	19,562	19,562	19,562	19,562
Pseudo R-squared	0.205	0.205	0.205	0.205	0.205

*** p<0.01, ** p<0.05, * p<0.1

…and looking at asset classes, we get the following profiles:

- Currency derivatives are strongly exchanged by the most exporting firms, with a lower long term debt and with higher profit margins.
- Commodity derivatives are more likely to be traded by large, relatively less exporting and less profitable firms.
- Credit derivatives are generally traded by the same type of firms trading currency derivatives, with the difference that credit derivative trading firms are generally much bigger.
- Equity derivatives are generally traded by firms which are less solvent but more liquid and significantly smaller than those trading currency derivatives.
- Interest rate derivatives are generally traded by more indebted and less liquid firms.

Conclusions

- First exploratory analysis of EMIR transaction-level data on derivatives traded by NFCs
- Demographic analysis suggests that firm size matters but differences exist across countries and sectors.
- Logit regression results confirm the role of firms size and suggest that high exports and lower long-term debt ratios are common characteristics of firms trading derivatives in our sample. Financially stable but less liquid firms also decide to use derivatives.
- We go further in trying to identify specific profiles of firms in relation to different types of derivatives.

Challenges and way forward:

- Enlarge the time coverage of the dataset.
- Go deeper in the analysis of NFCs' derivatives trading using quantitative information on number of contracts and notional amounts.
- Country and sector analysis.

Thank you!