

WINTER RESEARCH UPDATE

14 DECEMBER 2022



ON TODAY'S CALL



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AGENDA

QUIZ SOLUTION

- Ludovic Thebault, European DataWarehouse

GAS PROJECT

- Max Riedel, Leibniz Institute for Financial Research SAFE

PUBLICATIONS

- Ludovic Thebault, European DataWarehouse

DATA AVAILABILITY REPORT

- Ludovic Thebault, European DataWarehouse

PERFORMANCE TRENDS

- Ludovic Thebault, European DataWarehouse

PRESENTATION OF WORKING PAPER USING RMBS DATA

- Matteo Falagiarda, European Central Bank

PRESENTATION OF RESEARCH PAPER USING SME DATA

- Carina Schlam, Deutsche Bundesbank

Q & A

QUIZ SOLUTION

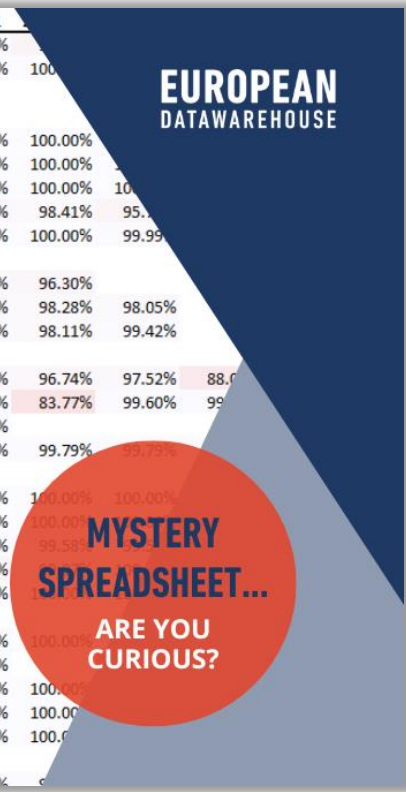
LUDOVIC THEBAULT, EUROPEAN DATAWAREHOUSE

QUIZ SOLUTION (THE MYSTERY SPREADSHEET...)

What does European DataWarehouse's mystery spreadsheet represent?

- A) Data Quality (100% = perfect quality)
- B) Data Completeness (100% = perfect completeness)
- C) Data Continuity (100% = loans IDs at t+1 were already in the previous upload)

EDCODE	2014-Q1	2014-Q2	2014-Q3	2014-Q4	2015-Q1	2015-Q2	2015-Q3	2015-Q4	2016-Q1	2016-Q2	2016-Q3	2016-Q4
RMBMBE000095100120084	98.25%	98.23%	96.61%	94.89%	91.96%	93.93%	94.25%	96.63%	98.10%	98.10%	98.10%	98.10%
RMBMDE000950100120151							0.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBMES000138100120037	56.35%	100.00%	100.00%	100.00%	100.00%	100.00%						
RMBMES000138100220050	68.29%	100.00%	99.98%	100.00%	100.00%	100.00%	0.00%	0.00%				
RMBMES000138100320066	79.59%	100.00%	99.98%	100.00%	100.00%	100.00%	0.00%	0.00%	100.00%	100.00%		
RMBMES000140100120090	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		
RMBMES000140100220122	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBMFR000083100220149		0.00%	96.84%	95.86%	94.89%	92.85%	93.28%	94.61%	96.38%	98.41%	95.1%	
RMBMIT000103100220095	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%
RMBMIT000103100520171												
RMBMNL000125100120063	97.93%	96.95%	97.06%	95.53%	95.54%	96.87%	96.47%	95.98%	97.38%	96.30%		
RMBMNL000125100220111	97.19%	98.35%	99.28%	98.71%	98.41%	98.14%	97.90%	97.69%	97.74%	98.28%	98.05%	
RMBMNL000125100320077	97.75%	98.74%	98.84%	98.72%	98.40%	99.10%	99.05%	98.47%	98.22%	98.11%	99.42%	
RMBMNL000125100420117	95.98%	96.94%	96.69%	97.38%	96.55%	97.56%	96.44%					
RMBMNL000125100520080	96.92%	98.66%	96.62%	97.57%	97.37%	98.13%	97.49%	96.93%	96.76%	96.74%	97.52%	88.0%
RMBMNL000185100120109	99.52%	99.38%	99.28%	99.16%	31.86%	50.38%	99.63%	99.77%	99.88%	83.77%	99.60%	99.9%
RMBMNL000185100220115	99.50%	99.50%	99.57%	99.34%	3.22%	12.71%	99.66%	99.82%	99.75%			
RMBMNL000185100320139	0.00%	0.00%	0.00%	0.00%	99.52%	99.71%	99.84%	99.74%	99.58%	99.79%	99.75%	
RMBMNL001345100220171												
RMBMUK000064100120061	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBMUK000113100120082	99.05%	98.44%	96.03%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBMUK000172100220060	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	99.62%	99.60%	99.58%	99.58%	
RMBMUK000172100320068	99.97%	99.96%	99.96%	99.96%	99.93%	99.95%	99.24%	100.00%	95.80%			
RMBMUK000172100420082	99.96%	99.97%	99.96%	94.93%	99.95%	99.96%	96.57%	100.00%	100.00%			
RMBMUK000203100120065	99.92%	99.94%	99.94%	99.95%	99.96%	99.97%	99.97%					
RMBMUK000209100520063	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.40%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBMUK000551100120075		0.00%	0.00%	93.19%	77.88%	92.46%	99.92%	91.76%	99.95%			
RMBSBE000043100120081	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBSBE000043100220113	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RMBSBE000043100420150							0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
RMBSBE000043100520173												
RMBSBE000044100120071	99.99%	98.65%	100.00%	99.99%	99.98%	99.99%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%



GREEN AUTO SECURITISATION PROJECT

MAX RIEDEL, LEIBNIZ INSTITUTE FOR FINANCIAL
RESEARCH SAFE

Green Auto Securitisation (GAS)



EUROPEAN
DATAWAREHOUSE

Overview of the GAS project



- Collaborative project
 - Leibniz Institute for Financial Research SAFE
 - European DataWarehouse GmbH
- Funding
 - German Federal Ministry for Education and Research (BMBF)
 - Climate Protection and Finance (KlimFi) funding initiative
- Goal: Promotion of the green auto asset-backed securities (ABS) market
- Start: 15. October 2022
- Length: three years



Prof. Dr. Loriana Pelizzon
Leader, subproject 1



Marco Angheben
Leader, subproject 2

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Gas Project in a nutshell



The diagram features a large light blue circle on the left containing the text 'Gas Project deliverables'. To its right, a vertical orange ribbon-like path contains three circular icons: a database cylinder at the top, a magnifying glass over a green ECG line in the middle, and a classical building facade at the bottom. To the right of each icon is a corresponding text block describing a project phase.

Gas Project deliverables

Development of a model database

Four building blocks:

- (i) the sustainability characteristics of the **car manufacturers**
- (ii) the characteristics of **car models**
- (iii) information on car **loans** (and **leases**)
- (iv) the characteristics of **securitisation products**.

Analysis and definition of automobile-related transparent sustainability factors

Investigation of the relationship between **low-emission vehicles** and **credit risk**

Proposal of a framework for two new green financial products:

- 1) **Green Auto and Leasing Loans**
- 2) **Green Auto and Leasing ABS**

How you can contribute to the success of the GAS project?



Accuracy of results and the success of the project depend on data availability and quality in compliance with the German General Data Protection Regulation

- We kindly ask for loan-level information:
 - Car fuel/motor type
 - Euro emission standards (EURO Norm)
(these statistics are available in ABS offering prospectuses but not always at loan level)
- Additional information on automobiles:
 - Production and registration dates
 - Resale prices
 - Depreciation rates
 - Costs of ownership
 - Car model identifier (such as VIN or other standards)



Max Riedel

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PUBLICATIONS

LUDOVIC THEBAULT, EUROPEAN DATAWAREHOUSE

DATA AVAILABILITY REPORT

Data Availability Report Q2 2022 - European DataWarehouse (eurodw.eu)

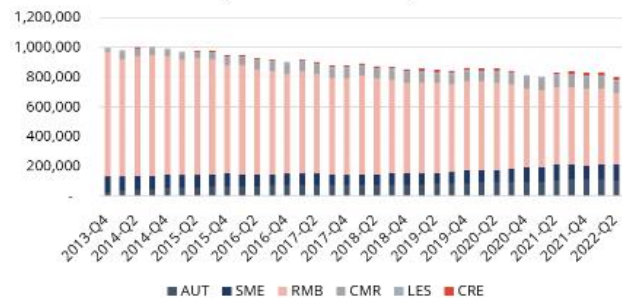
DATA AVAILABILITY REPORT Q2 2022

European DataWarehouse's (EDW) database contains nearly ten years of data representing most of Europe's public securitisations.

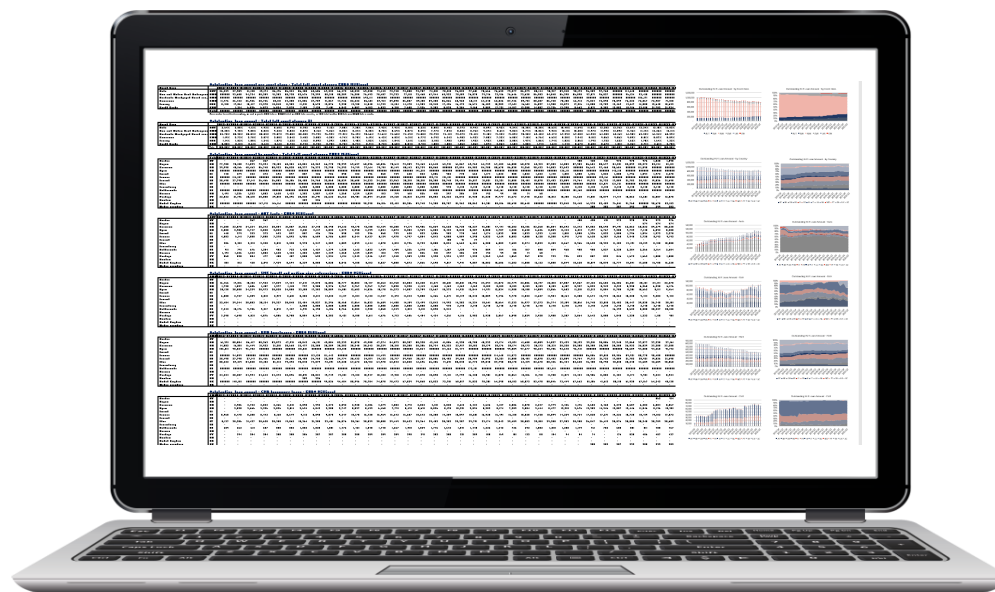
The Q2 2022 Data Availability Report provides quarterly statistics on the outstanding number of active securitisations, loan amounts, number of loans, and borrowers, as well as loan level data (LLD) uploads to our database. The report is drilled down to show the outstanding amounts over time for each of the 1641 securitisations.

As of Q2 2022, the outstanding number of loans in our database totalled 38.9 million, with a value of almost €0.8 trillion from 14 European countries.

Outstanding EUR Loan Amount - by Asset Class



The values for these loan amounts are adjusted for errors (dummy values, decimal points inconsistencies) observed in the oldest uploads. Currencies have been converted when loan amounts were reported in a currency other than the Euro.



LIST OF PUBLICATIONS

EDW's own publications, plus third party research: <https://eurodw.eu/knowledge/research/>

VIDEOS

- What is European DataWarehouse?
- European DataWarehouse on the Securitisation Regulation (condensed version)
- European DataWarehouse on the Securitisation Regulation (full length version)
- European DataWarehouse on the Securitisation Regulation (versión reducida en español)
- European DataWarehouse sobre el nuevo reglamento de utilización (versión completa en español)

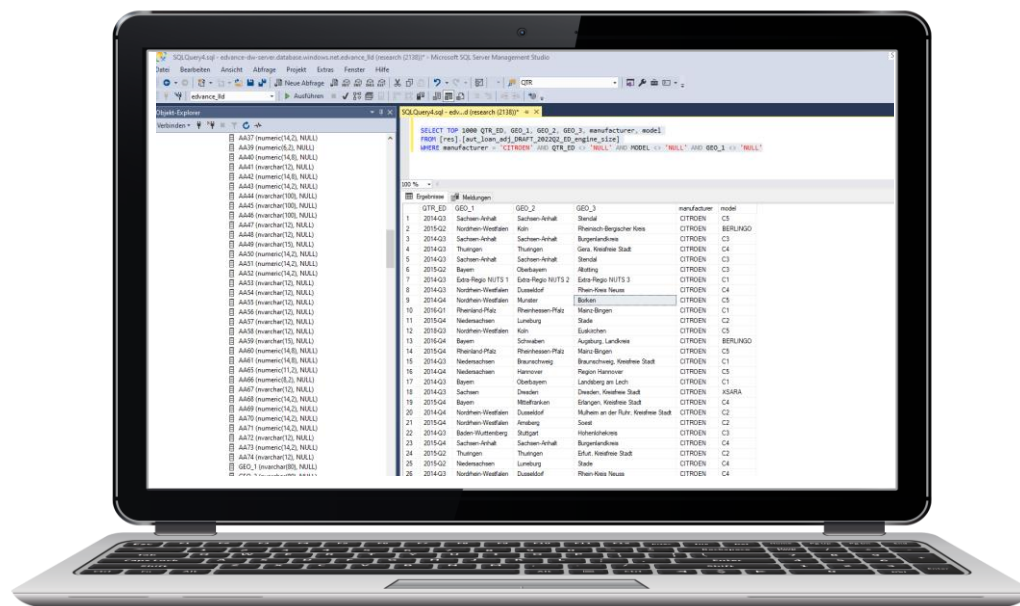
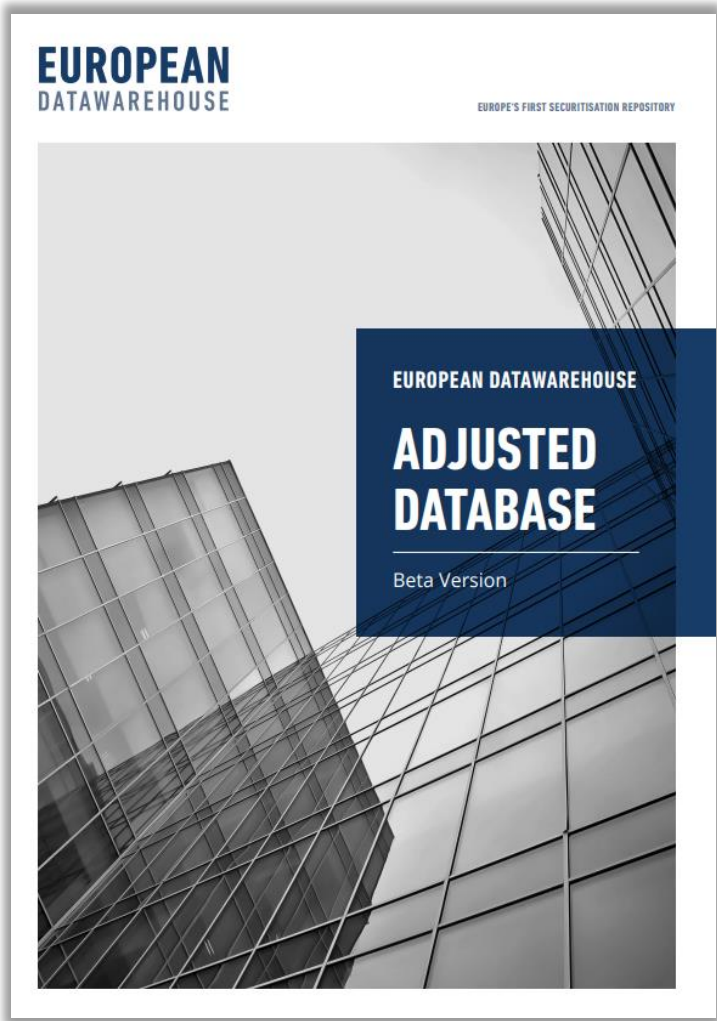
CORPORATE INFORMATION AND PUBLICATIONS

19 AUGUST 2022
Corporate Presentation

YEAR	MONTH	TITLE	PUBLISHER	PUBLICATION TYPE	KEYWORDS	ACCESSIBILITY	EDW THIRD PARTY
2022	July	European Systems Risk Board (ESRB) Monitoring Systems Bill	ESRB	Central bank publication	Systemic risk, securitisation	Direct	Central bank
2022	June	Spring 2022 Research Webinar	EDW (Guest speaker from Universite)	Webinar	Loan performance, data availability, energy performance, adjusted	Direct	EDW
2022	June	Research Embedded Securities cover on the securitisation	Deutsche Bundesbank	Central bank publication	ABS SME, revolving investments	Direct	Central bank
2022	May	Moody's Investor Service (MIS) will raise data quality	Moody's	Data comment	EDMA reporting standards	Restricted	Rating agency
2022	April	Introducing the EDW adjusted Database	EDW	Webinar	Adjusted database	Direct	EDW
2022	February	New Year 2022 Research Webinar	EDW	Webinar	Loan performance, energy performance, adjusted database, COV	Direct	EDW
2022	February	ESRB Report EUC on securitisation: investor concerns 27/09/2021	ESRB	Data comment	ESG, sustainable finance, data availability	Direct	Others
2021	December	Winter 2021 Research Webinar	EDW (Guest speaker from European)	Webinar	Loan defaults, machine learning, RMBS prepayments, forecasting	Direct	EDW
2021	November	Hyposet 2021 - From the ERM-ECBC (European Mortgage Fed)	ERM-ECBC (EDW in HYPOSTAT)	COVID Impact	COVID impact, mortgages	Direct	Others
2021	October	Journal of Financial Economics: Forecasting Loan Defaults	Journal of Financial Economics	Academic publication	mortgage defaults, machine learning	Direct	Academic Publication
2021	September	Summer 2021 Research Webinar	EDW	Webinar	COVID, mortgage, credit risk and COVID	Direct	EDW
2022	May	Spring 2021 Research Webinar	EDW	Webinar	Data availability, COVID, Energy efficiency, payment holidays	Direct	EDW
2021	May	Journal of Real Estate Finance & Economics Building Energy	The Journal of Real Estate Finance & Economics	Academic publication	mortgage defaults, energy efficiency	Direct	Academic Publication
2021	May	Open Architecture Report Q4 2020	EDW	Data comment	Data availability	Direct	EDW
2021	March	Monitoring the Impact of COVID-19: Q1 2021 RMBS Report	EDW	COVID Impact	COVID impact, mortgages	Direct	EDW
2021	February	New Year 2021 Research Webinar	EDW (Guest speaker from European)	Webinar	COVID, RMBS performance, Loan amortisation, Cover your assets	Direct	EDW
2021	February	Monitoring the Impact of COVID-19: Q4 2020 RMBS Tracker	EDW	COVID Impact	COVID impact, mortgages	Direct	EDW
2020	December	COVID-19 Impact	EDW	Webinar	COVID, loan performance, payment holiday, reporting practices	Direct	EDW
2020	December	COVID-19: Who has Benefited Most from COVID-ERA Auto Loan	EDW	COVID Impact	COVID impact, auto loans, mortgages	Direct	EDW
2020	December	COVID-19: Survey of Payment Holiday Reporting Practices in EU	EDW	COVID Impact	COVID impact, mortgages	Direct	EDW
2020	November	Moody's Analyzes COVID-19 Impacts of the Dutch Mortgage	Moody's	COVID Impact	COVID impact, Netherlands mortgages	Restricted	Rating agency
2020	November	Moody's Analyzes Continued Stress of the U.S. Mortgage Market	Moody's	Credit research	COVID impact, mortgages	Restricted	Rating agency
2020	November	Monitoring the Impact of COVID-19: Q4 2020 AUTO Tracker	EDW	COVID Impact	COVID impact, mortgages, auto loans	Direct	EDW
2020	September	Credit Performance Review	EDW	COVID IMPACT	COVID impact, implied payment holidays	Direct	EDW
2020	August	Monitoring the Impact of COVID-19: Q3 2020 RMBS Tracker	EDW	COVID Impact	COVID impact, mortgages	Direct	EDW
2020	July	Martin Hibbert and Werner Oberdorfer: The Impact of SIV on	Academic Publication	Academic publication	security design, asset-backed securities, retention, moral hazard	Direct	Academic Publication
2020	June	Thomas Davigan: Search Recaptalization and Bank Risk Taking	Academic Publication	Academic publication	TLTRO, Unconventional Monetary Policy, Credit Risk, Bank Capital	Direct	Academic Publication
2020	June	Monitoring the Impact of Covid-19: Q2 2020 Report	EDW	COVID Impact	First time delinquencies, auto, consumer, leases, RMBS	Direct	EDW
2020	February	Bank Terms and Conditions	EDW	Data comment	Reporting lag, data timeliness	Direct	EDW
2019	December	ESG analysis, version 3.0 and 3.1	EDW	Data comment	ESMA data in ECB data	Direct	EDW
2019	November	BSM Index: Insights from European Datawarehouse	EDW	Data comment	BSM Index Spain	Direct	EDW
2019	November	Index 2019 Index	EDW	SMI performance	ESG, SME performance	Direct	EDW
2019	October	ESBIE: The Impact of Lending Standards on Default Rates of Assets	ECB	Central bank publication	loan defaults, lending standards, residential real estate, loan-loss	Direct	Central bank

ADJUSTED DATABASE REPORT

Available online: https://eurodw.eu/research_articles/edw-adjusted-database-beta-report/ (or via email)



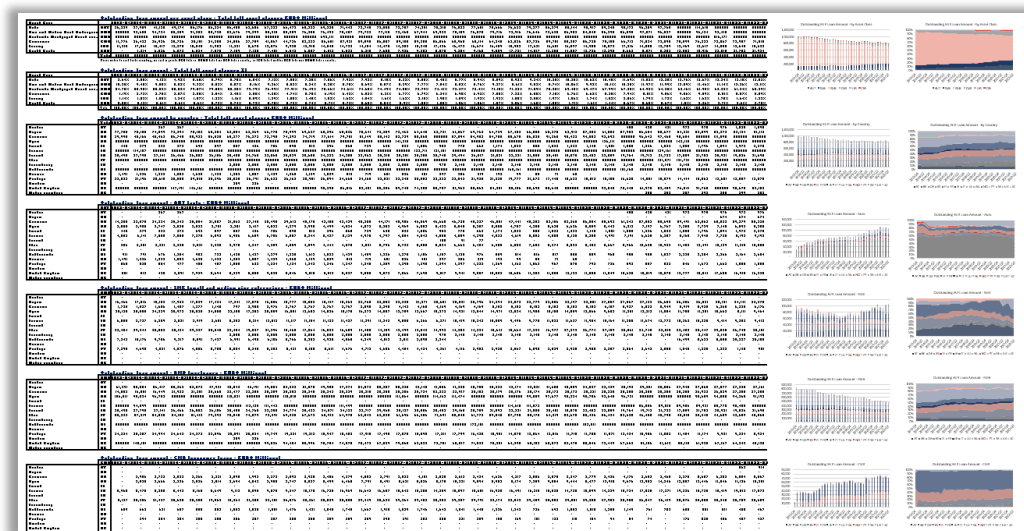
DATA AVAILABILITY REPORT

LUDOVIC THEBAULT, EUROPEAN DATAWAREHOUSE

DATA AVAILABILITY REPORT UPDATED TO 2022-Q2

The previous report only counted ECB data, we now also have ESMA and FCA data

- If a deal reports in several databases, we count it only once in our statistics
- ECB data used if available, otherwise we use ESMA data; If neither is available, we use FCA data
- Values are adjusted and converted to Euros

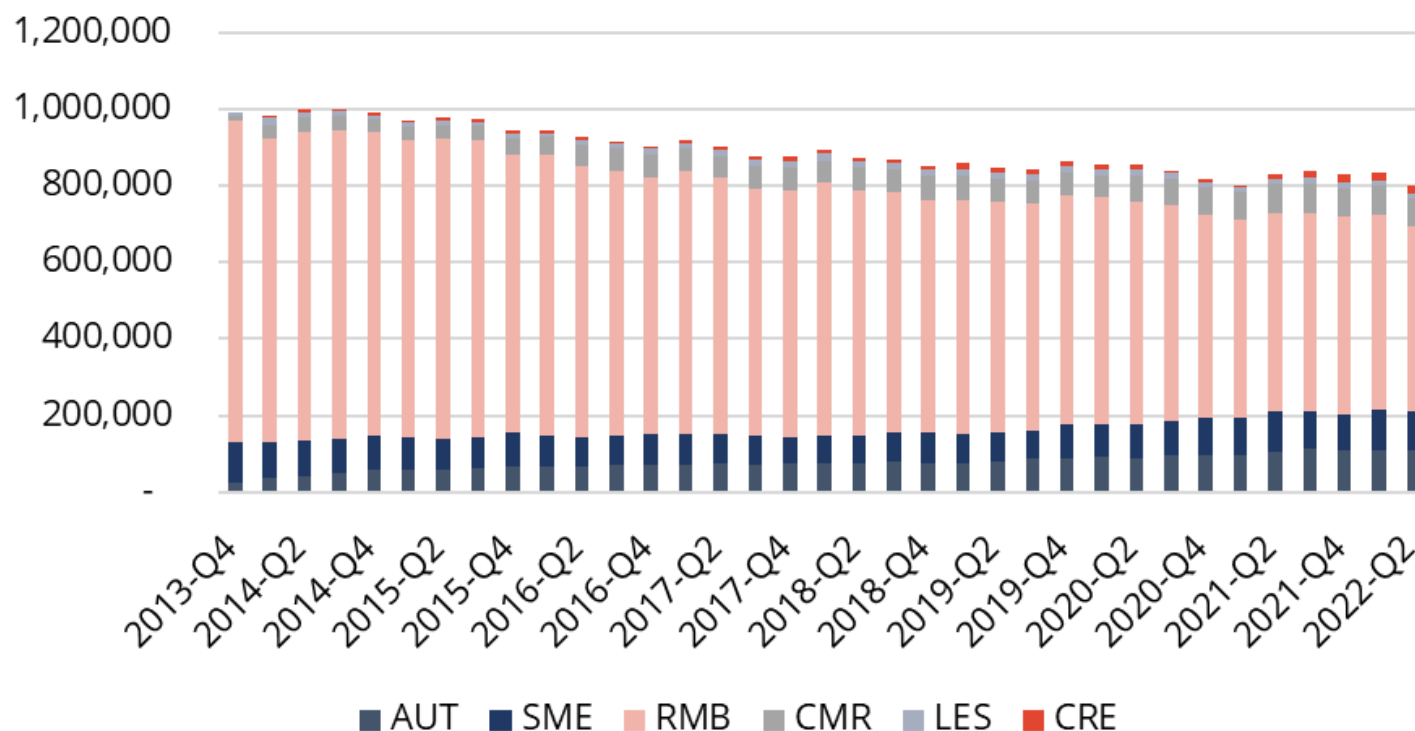


DATA AVAILABILITY REPORT

Ca. EUR 800 billion outstanding of which:

- RMBS € 480 bn; AUTO € 108 bn; SME € 104 bn; CMR € 71 bn
- % of RMBS has decreased, % of AUTO has increased

Outstanding EUR Loan Amount - by Asset Class

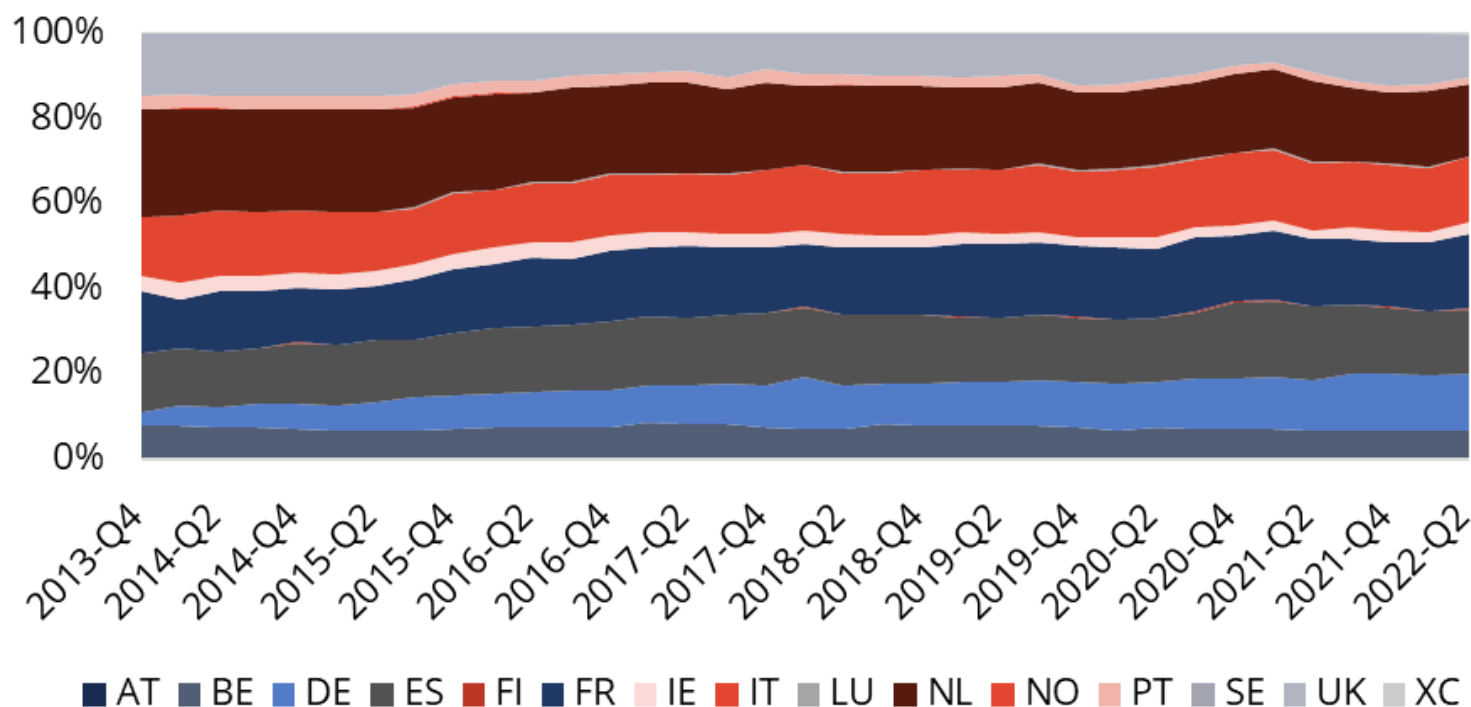


DATA AVAILABILITY REPORT

Outstanding amount of loans by country

- Securitisation is not used to the same extent by all lenders in all countries and all asset classes
- FR now accounts for €139bn, NL for €135bn, Italy and Spain for €122bn, Germany €105 bn, UK €82bn

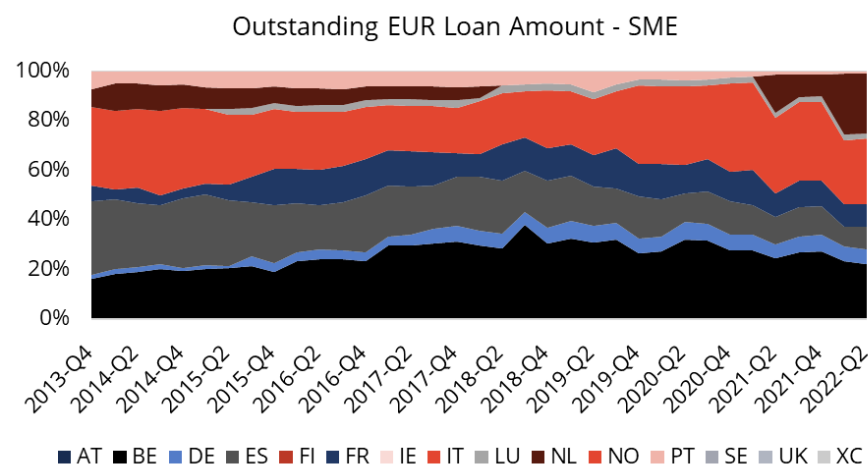
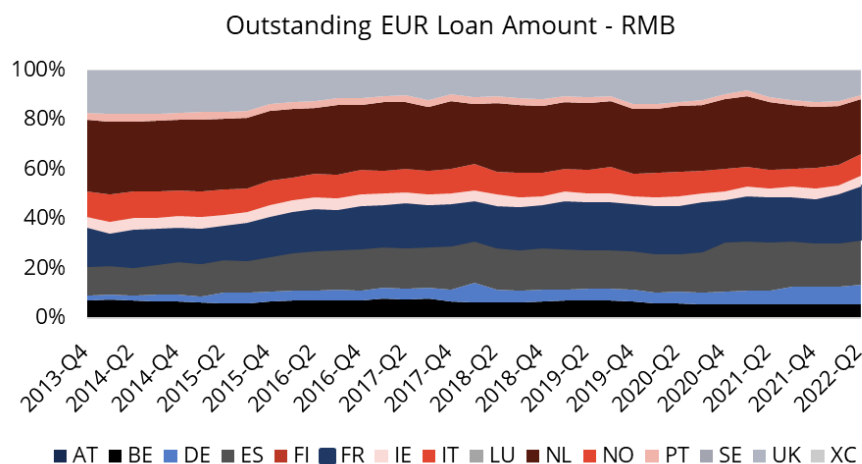
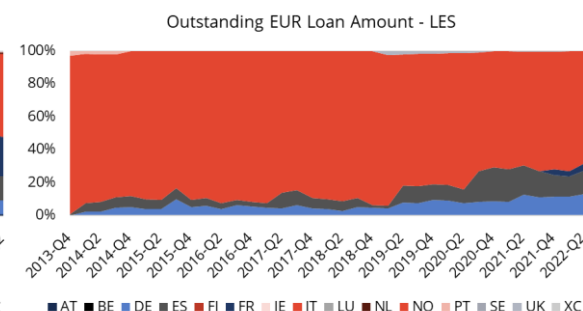
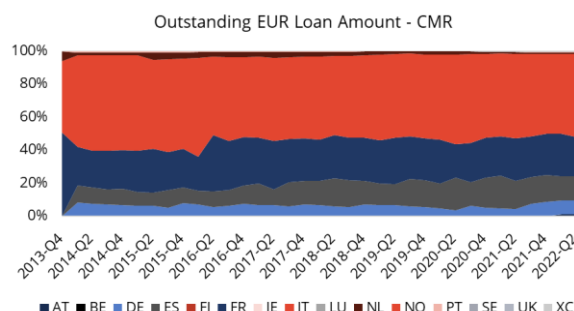
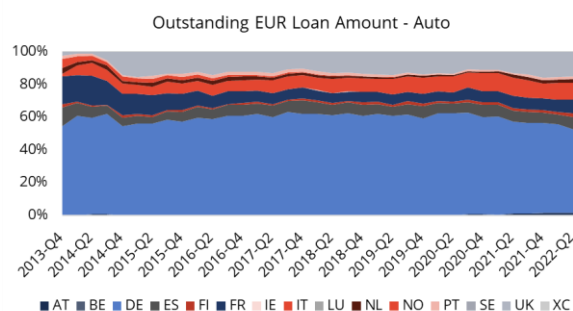
Outstanding EUR Loan Amount - by Country



DATA AVAILABILITY REPORT

Substantial differences across asset classes

- Germany accounts for 50% of AUTO deals; Italy for 50% of CMR deals and 70% of LES deals
- RMBS and SME asset classes are more balanced



DATA AVAILABILITY REPORT UPDATED TO 2022-Q2

Deal by deal data shown also in time series for ECB, ESMA, and FCA data

- This allows for comparisons when data was reported both in ECB and ESMA in a given period
- Makes it easier to look at data availability, concentration effects etc...

Summary Please note: amounts are in millions and foreign currency

EDCODE	SECURITISATION	Cou	Ass	Deal Name	Activ	Source	2020-Q1	2020-Q2	2020-Q3	2020-Q4	2021-Q1	2021-Q2	2021-Q3	2021-Q4	2022-Q1	2022-Q2
RMBSBE000095100120084	KGCEPHLVVKVRZY01T	BE	RMB	Bass Master Issuer N.V. - S.A.	1	ECB	21,629.33	21,666.43	21,674.27	21,618.83	21,585.15	21,411.29	21,672.98	21,670.61	21,692.80	21,707.68
RMBSBE000095100120084	KGCEPHLVVKVRZY01T	BE	RMB	Bass Master Issuer N.V. - S.A.	1	ESMA	-	-	-	-	-	-	-	-	21,692.80	21,707.68
RMBSBE000043100120081	NULL	BE	RMB	PENATES-1	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000043100220113	NULL	BE	RMB	PENATES-4	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000043100420150	NULL	BE	RMB	PENATES-5	0	ECB	404.72	370.20	346.91	-	-	-	-	-	-	-
RMBSBE000043100520173	NULL	BE	RMB	Penates-6	0	ECB	3,797.59	3,531.83	3,416.38	3,225.84	3,044.18	2,851.27	2,692.07	2,562.82	2,442.90	2,398.72
RMBSBE000044100120071	NULL	BE	RMB	Loan Invest NV/SA, compartme	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000044100220087	NULL	BE	RMB	Loan Invest NV/SA, compartme	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000044100320093	NULL	BE	RMB	Loan Invest NV/SA, compartme	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000044100420117	NULL	BE	RMB	Loan Invest NV/SA, compartme	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000044100520163	NULL	BE	RMB	Home Loan Invest 2016	1	ECB	1,662.01	1,574.34	1,490.71	1,370.00	1,294.29	1,216.91	1,155.40	1,100.90	1,047.39	1,002.00
RMBSBE000044100820191	6B2PBRV/IFCJDMR45R	BE	RMB	Loan Invest NV/SA, compartme	1	ECB	2,792.37	2,669.39	2,540.63	2,383.19	2,258.46	2,141.51	2,041.73	-	-	-
RMBSBE000044100820191	6B2PBRV/IFCJDMR45R	BE	RMB	Loan Invest NV/SA, compartme	1	ESMA	-	-	-	-	2,259.71	2,142.45	2,073.16	1,951.33	1,859.45	1,787.24
RMBSBE000087100320118	NULL	BE	RMB	Record Lion	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000087100420090	NULL	BE	RMB	Belgian Lion RMBS I	0	ECB	1,522.77	1,444.14	-	-	-	-	-	-	-	-
RMBSBE000087100520121	NULL	BE	RMB	Belgian Lion RMBS II	0	ECB	1,433.37	1,351.95	-	-	-	-	-	-	-	-
RMBSBE000108100120082	NULL	BE	RMB	Royal Street - 1	0	ECB	384.52	364.72	342.82	321.49	301.95	-	-	-	-	-
RMBSBE000108100220106	NULL	BE	RMB	Royal Street - 2	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000108100320112	NULL	BE	RMB	Royal Street - 3	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000161100120115	NULL	BE	RMB	B-Arena NV/SA compartme f	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000161100220121	NULL	BE	RMB	B-Arena NV/SA compartme f	0	ECB	-	-	-	-	-	-	-	-	-	-
RMBSBE000161100320178	NULL	BE	RMB	B-Arena NV/SA compartme f	0	ECB	410.50	396.17	379.82	361.18	341.55	324.01	305.68	290.85	277.21	265.04
RMBSBE000170100120090	NULL	BE	RMB	HYPOLAN	0	ECB	-	-	-	-	-	-	-	-	-	-
SMEBSBE000095100220092	NULL	BE	SME	Eas&e Master Issuer N.V. - S.A.	1	ECB	9,792.38	9,834.30	9,842.15	9,794.39	9,734.11	9,809.23	9,815.38	9,787.62	9,827.36	9,808.07
SMEBSBE000043100320121	NULL	BE	SME	MERCURIUS-1	1	ECB	988.33	934.34	884.89	826.53	778.33	730.70	676.22	628.06	584.21	544.96
SMEBSBE000044100720179	NULL	BE	SME	SME Loan Invest 2017	1	ECB	2,961.80	2,832.92	2,716.59	2,581.12	2,445.87	2,315.70	2,192.12	2,070.25	1,933.35	1,822.21
SMEBSBE000044100920209	6B2PBRV/IFCJDMR45R	BE	SME	SME Loan Invest 2020	1	ECB	-	4,999.45	4,838.65	4,643.54	4,445.57	4,237.74	4,064.34	-	-	-
SMEBSBE000044100920209	6B2PBRV/IFCJDMR45R	BE	SME	SME Loan Invest 2020	1	ESMA	-	-	-	-	-	4,237.74	4,064.34	3,953.26	3,703.72	3,533.34
SMEBSBE000087100620121	NULL	BE	SME	Belgian Lion SME II	0	ECB	-	-	-	-	-	-	-	-	-	-
SMEBSBE000087102020189	NULL	BE	SME	Belgian Lion SME III	1	ECB	9,288.36	9,285.79	9,284.40	9,286.57	9,279.77	9,292.42	9,282.85	8,682.22	8,092.11	7,569.01

DATA AVAILABILITY REPORT UPDATED TO 2022-Q2

Underlying data also shown, deal by deal, for ECB, ESMA and FCA data

- Allows user to make custom comparisons and see what data was used in the charts

EDCODE	Securisation ID	COUNTRY	EALTY	PCD	ACTIVELOANS	ACTIVEBORROWERANCE	(Original Curre	QTR	DBSOURCE	EUR BALANCE	USE (to avoid double counting)
AUTMDE000245104020155	NULL	DE	AUT	30-09-15	52,680	52,337	732,721,642	2015-Q3	ECB	732,721,642	yes
AUTMDE000245104020155	NULL	DE	AUT	31-12-15	79,572	78,891	1,106,039,803	2015-Q4	ECB	1,106,039,803	yes
AUTMDE000245104020155	NULL	DE	AUT	31-03-16	81,122	80,412	1,103,941,904	2016-Q1	ECB	1,103,941,904	yes
AUTMDE000245104020155	NULL	DE	AUT	30-06-16	80,516	79,824	1,070,979,665	2016-Q2	ECB	1,070,979,665	yes
AUTMDE000245104020155	NULL	DE	AUT	30-09-16	84,579	83,817	1,107,987,410	2016-Q3	ECB	1,107,987,410	yes
AUTMDE000245104020155	NULL	DE	AUT	31-12-16	86,083	85,322	1,107,758,869	2016-Q4	ECB	1,107,758,869	yes
AUTMDE000245104020155	NULL	DE	AUT	31-03-17	84,938	84,188	1,067,702,791	2017-Q1	ECB	1,067,702,791	yes
AUTMDE000245104020155	NULL	DE	AUT	30-06-17	83,786	82,991	1,025,440,995	2017-Q2	ECB	1,025,440,995	yes
AUTMDE000245104020155	NULL	DE	AUT	30-09-17	92,140	91,236	1,149,020,273	2017-Q3	ECB	1,149,020,273	yes
AUTMDE000245104020155	NULL	DE	AUT	31-12-17	93,224	92,325	1,159,456,589	2017-Q4	ECB	1,159,456,589	yes
AUTMDE000245104020155	NULL	DE	AUT	31-03-18	19,466	19,366	253,170,943	2018-Q1	ECB	253,170,943	yes
AUTMDE000245104020155	NULL	DE	AUT	30-06-18	19,260	19,160	253,150,308	2018-Q2	ECB	253,150,308	yes
AUTMDE000245104020155	NULL	DE	AUT	30-09-18	19,053	18,957	252,606,723	2018-Q3	ECB	252,606,723	yes
AUTMDE000245104020155	NULL	DE	AUT	31-12-18	18,821	18,731	252,104,180	2018-Q4	ECB	252,104,180	yes
AUTMDE000245104020155	NULL	DE	AUT	31-03-19	18,560	18,464	251,204,867	2019-Q1	ECB	251,204,867	yes
AUTMDE000245104020155	NULL	DE	AUT	30-06-19	18,207	18,118	250,321,082	2019-Q2	ECB	250,321,082	yes
AUTMDE000245104020155	NULL	DE	AUT	30-09-19	17,864	17,789	249,366,148	2019-Q3	ECB	249,366,148	yes
AUTMDE000245104020155	NULL	DE	AUT	31-12-19	17,723	17,650	248,683,121	2019-Q4	ECB	248,683,121	yes
AUTMDE000245104020155	NULL	DE	AUT	31-03-20	17,263	17,199	239,701,187	2020-Q1	ECB	239,701,187	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-09-15	73,942	73,330	1,025,682,578	2015-Q3	ECB	1,025,682,578	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-12-15	75,744	75,124	1,026,575,112	2015-Q4	ECB	1,026,575,112	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-03-16	76,873	76,240	1,024,122,607	2016-Q1	ECB	1,024,122,607	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-06-16	72,393	71,822	933,749,091	2016-Q2	ECB	933,749,091	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-09-16	77,554	76,913	995,337,395	2016-Q3	ECB	995,337,395	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-12-16	102,187	101,124	1,355,920,525	2016-Q4	ECB	1,355,920,525	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-03-17	268,958	262,671	4,042,562,773	2017-Q1	ECB	4,042,562,773	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-06-17	678,279	649,746	9,216,965,340	2017-Q2	ECB	9,216,965,340	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-09-17	744,072	711,168	10,072,462,984	2017-Q3	ECB	10,072,462,984	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-12-17	871,658	829,544	12,003,212,331	2017-Q4	ECB	12,003,212,331	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-03-18	876,547	834,493	11,937,368,414	2018-Q1	ECB	11,937,368,414	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-06-18	883,120	840,905	11,960,340,635	2018-Q2	ECB	11,960,340,635	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-09-18	885,077	843,119	11,981,280,525	2018-Q3	ECB	11,981,280,525	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-12-18	886,692	845,157	12,004,295,538	2018-Q4	ECB	12,004,295,538	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	31-03-19	888,581	847,171	12,029,218,682	2019-Q1	ECB	12,029,218,682	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-06-19	888,568	847,246	12,052,933,249	2019-Q2	ECB	12,052,933,249	yes
AUTMDE000245104120153	:9900GJD3OQLRZCKW37N2015	DE	AUT	30-09-19	885,958	845,088	12,078,813,891	2019-Q3	ECB	12,078,813,891	yes

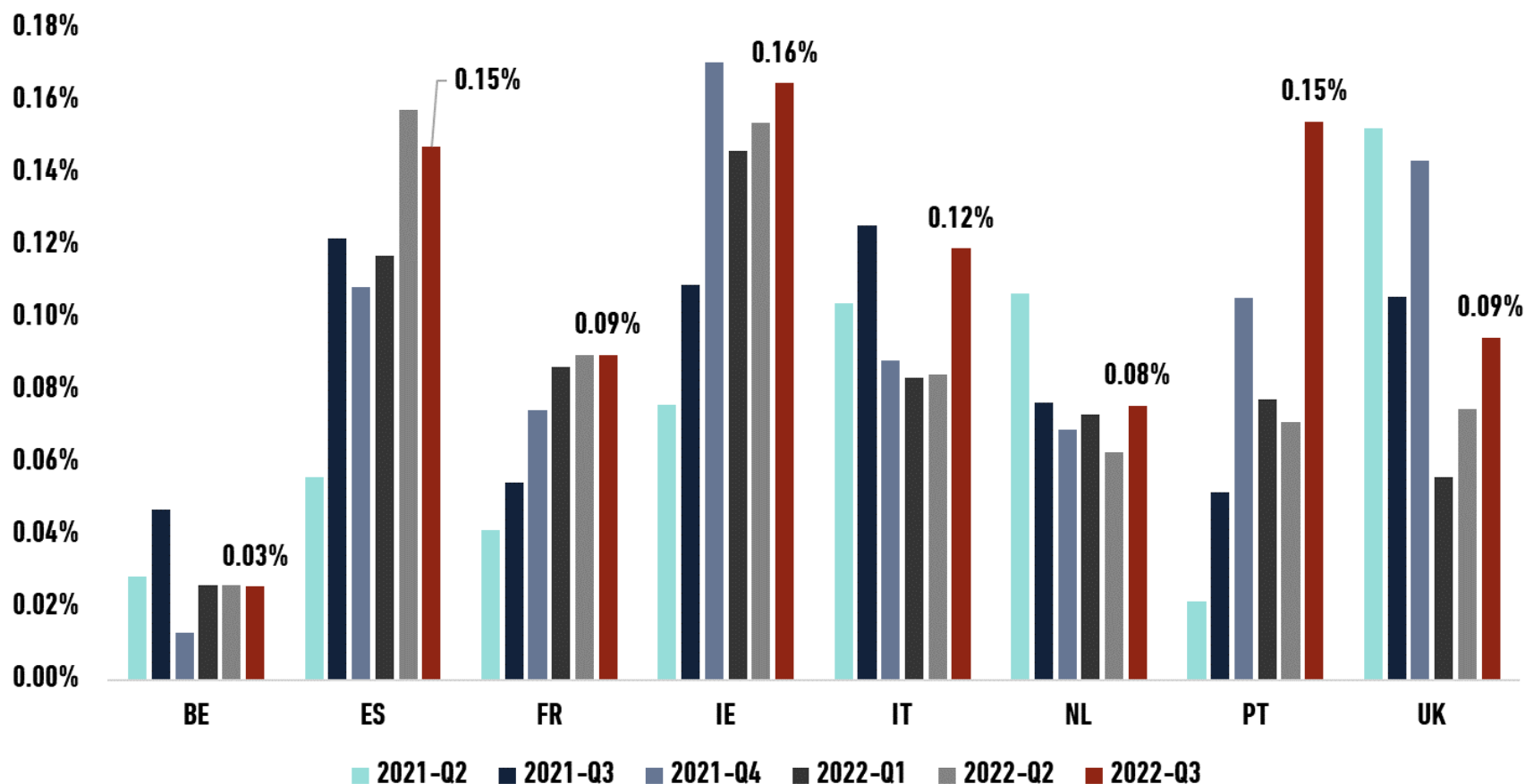
PERFORMANCE TRENDS

LUDOVIC THEBAULT, EUROPEAN DATAWAREHOUSE

RESIDENTIAL MORTGAGES – 30 TO 60 DAYS IN ARREARS

There have not been any significant spikes in delinquencies

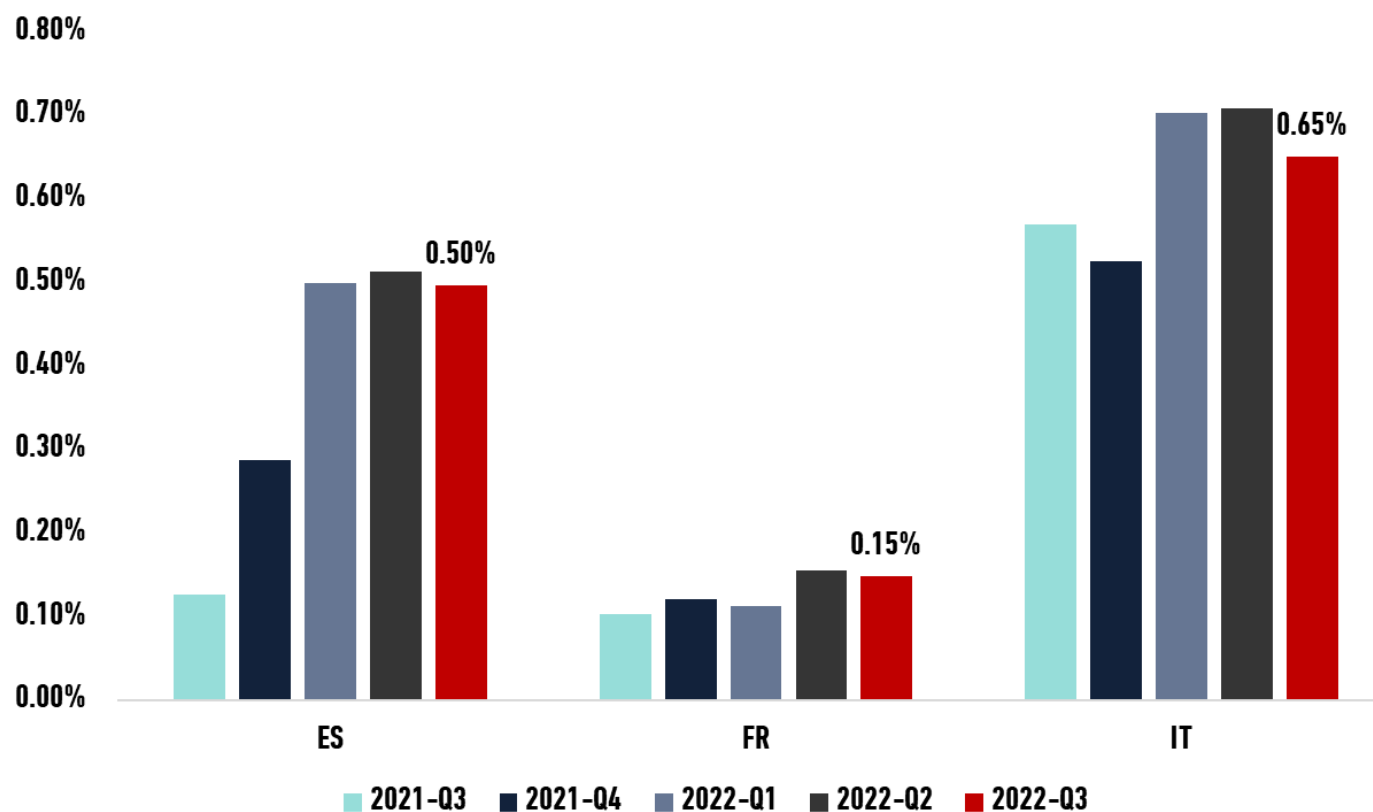
LOANS THAT ARE 30 TO 60 DAYS IN ARREARS
(% of Outstanding Amount)



SME LOANS – 30 TO 60 DAYS IN ARREARS

There have not been any significant spikes in delinquencies

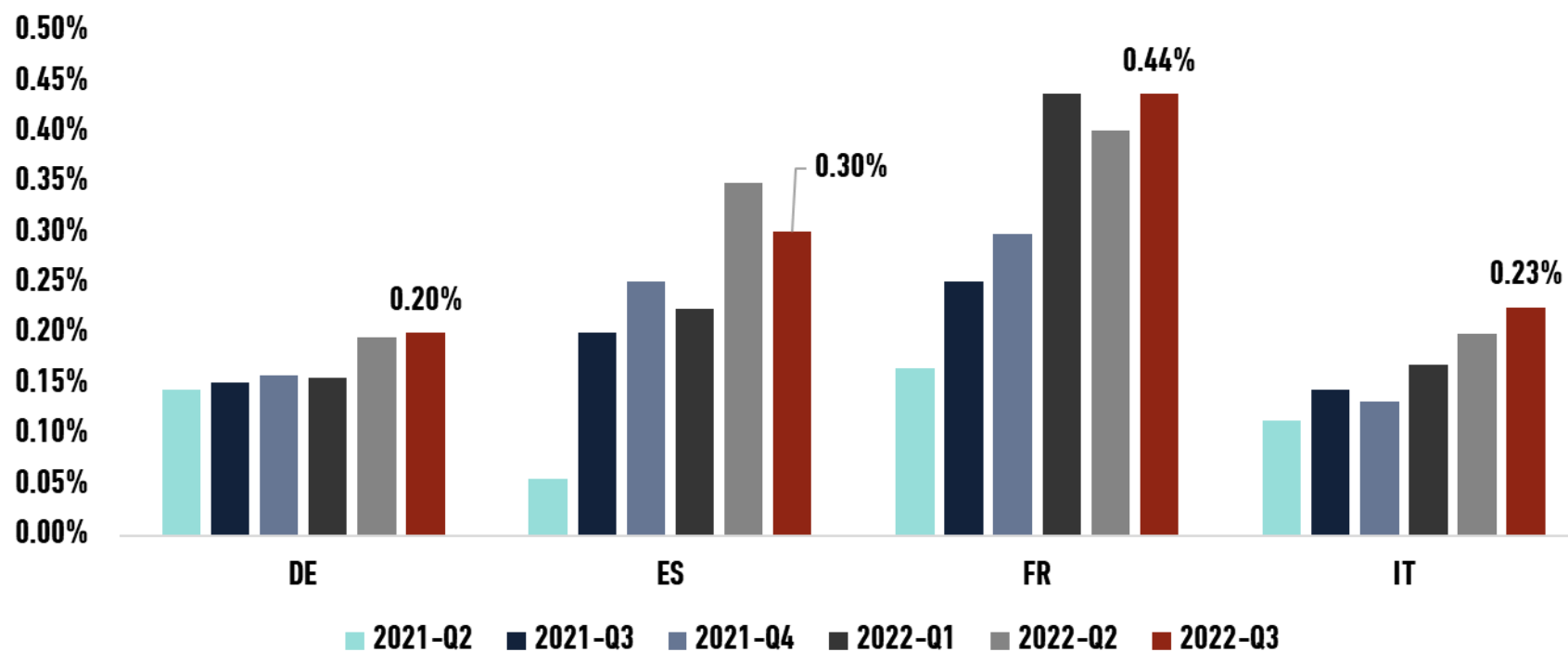
LOANS THAT ARE 30 TO 60 DAYS IN ARREARS
(% of Outstanding Amount)



AUTO LOANS – 30 TO 60 DAYS IN ARREARS

There have not been any significant spikes in delinquencies

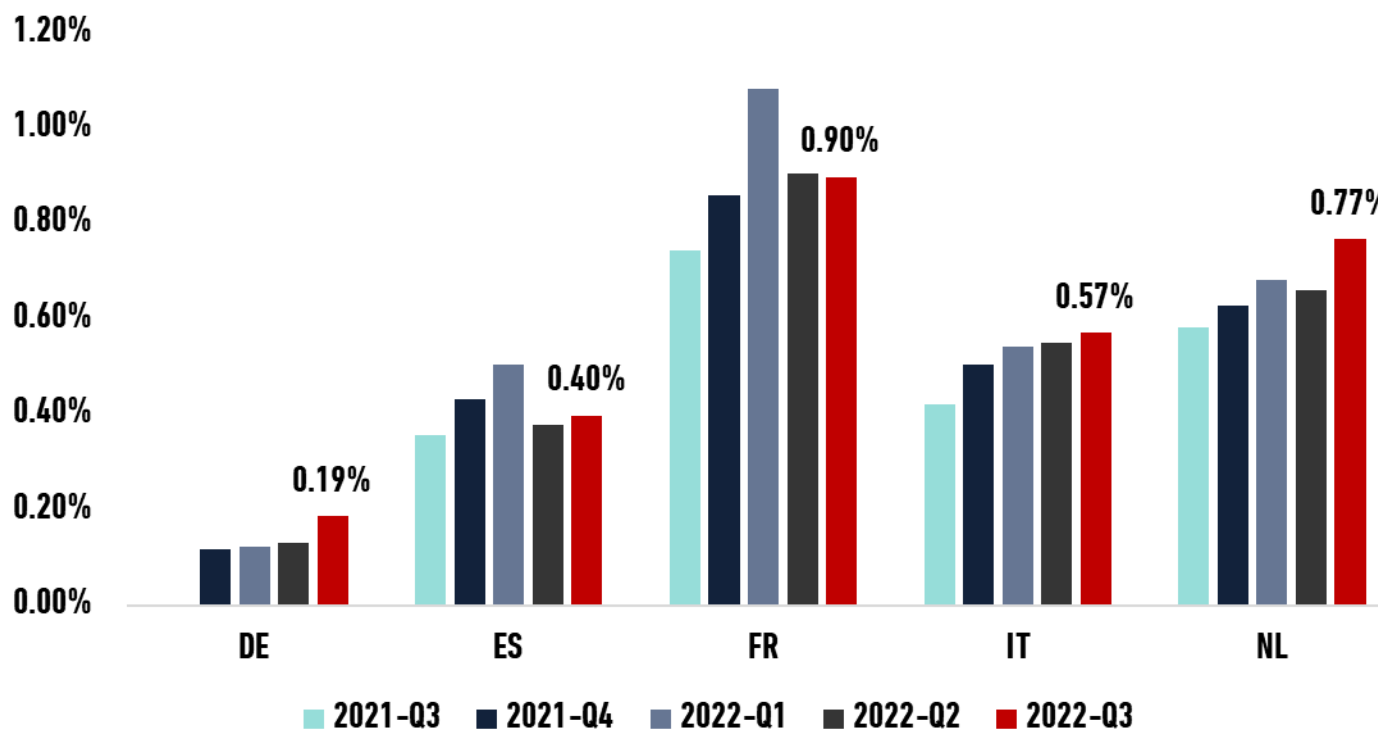
**LOANS THAT ARE 30 TO 60 DAYS IN ARREARS
(% of Outstanding Amount)**



CONSUMER LOANS – 30 TO 60 DAYS IN ARREARS

There have not been any significant spikes in delinquencies

**LOANS THAT ARE 30 TO 60 DAYS IN ARREARS
(% of Outstanding Amount)**



NAVIGATING THE HOUSING CHANNEL OF MONETARY POLICY ACROSS EURO AREA REGIONS

MATTEO FALAGIARDA, ECB

Navigating the housing channel of monetary policy across euro area regions

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European DataWarehouse's Winter Research Update Webinar

14 December 2022

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The views expressed in this paper are those of the authors and do not necessarily reflect those of the European Central Bank or the Eurosystem.

Motivation

- ▶ Importance of the housing market for the transmission of monetary policy in the euro area
 - ▶ The housing market reacts to monetary policy via investment, house prices and lending conditions
 - ▶ The housing market has a marked local dimension, which can lead to uneven transmission of monetary policy across/within countries

What we do

- ▶ Investigate the role of the housing market in the transmission of monetary policy in the euro area
 - ▶ Focus on the regional dimension (thanks to a novel regional dataset)
 - ▶ Distinguish between conventional and unconventional monetary policy
- ▶ Main findings:
 - ▶ Monetary policy propagates effectively to the economy, albeit in a heterogeneous fashion across regions
 - ▶ Unconventional monetary policy has been a key driver of economic activity and house prices since 2013
 - ▶ A larger impact of monetary policy is found in areas with lower labour income, suggesting that poorer regions stand to benefit the most from monetary policy accommodation

Literature

- ▶ Monetary policy has an impact on the housing market (Huber and Punzi, 2020; Nocera and Roma, 2017; Zhu, Betzinger and Sebastian, 2017; Hülsewig and Rottmann, 2021; Corsetti, Duarte and Mann, 2020)
- ▶ Role of the housing market in the business cycle (Nocera and Roma, 2017; Musso, Neri and Stracca, 2011; Goodhart and Hofmann, 2008)
- ▶ Monetary policy impact differs for
 - ▶ regional/households' income levels (Hauptmeier, Holm-Hadulla and Nikalexi, 2020; Lenza and Slacalek, 2021; Altavilla et al., 2021)
 - ▶ structural factors of the housing market, such as the share of homeownership or the share of variable-rate mortgages (Calza, Monacelli and Stracca, 2013; Causa, Woloszko and Leite, 2019; Corsetti, Duarte and Mann, 2020)
- ▶ Housing is a regional phenomenon (Ghent and Owyang, 2010; Del Negro and Otrok, 2007)

Regional data

- ▶ **Sample:** more than 2,000 observations from 1999 to 2018 (annual data) for 106 regions in Germany (NUTS1), Belgium, Spain, France, Ireland, Italy, Netherlands, Portugal (NUTS2)
- ▶ **Variables and sources:**
 - ▶ GDP, employment, GVA, etc. (ARDECO)
 - ▶ Homeownership rate, demographics (Eurostat)
 - ▶ House prices, LTV ratio, share of variable-rate mortgages (EDW)

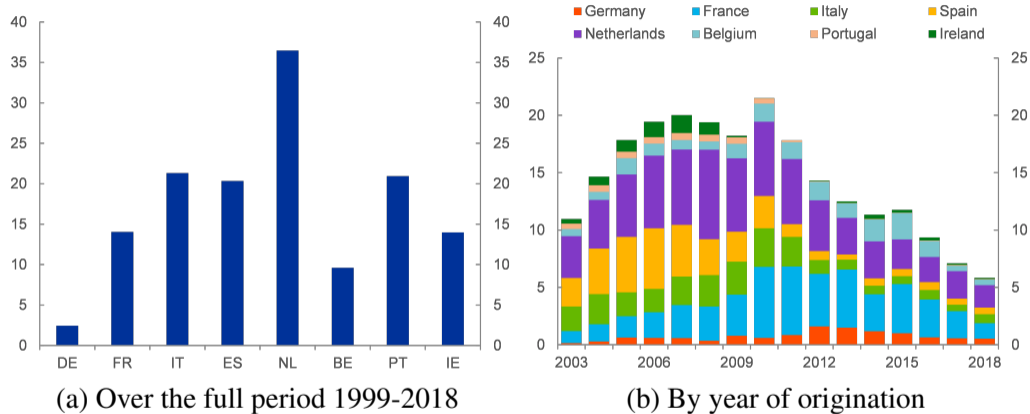
EDW data: How we processed the data

- ▶ Only loans underlying residential mortgage-backed securities (RMBS).
- ▶ Imputation techniques for the main static variables if for each loan (i) missing values in one or more submissions; (ii) inconsistent values across submissions.
- ▶ Only loans used for the purchase of a property with a price below EUR 5 million and above EUR 10,000.
- ▶ Exclude loans with missing information on the key variables used in the analysis.
- ▶ Adjust for multiple loans used to purchase the same property, as in [Gianinazzi, Pelizzon and Plazzi \(2018\)](#).

EDW data: Summary statistics (1999-2018)

	DE	FR	IT	ES	NL	BE	PT	IE
Number of loans (in thousand)	687.2	3381.6	1814.6	1886.6	2799.6	1125.9	496.6	291.6
Loan size (median, in EUR thousand)	87.3	87	100	120	160.4	100	68.6	180
Maturity (median, in years)	20	17	20	30	30	19.3	30.4	25
Share of fixed-rate loans (in %)	98.0	89.3	27.2	10.8	93.5	94.5	2.4	14.1
Borrower's income (median, in EUR thousand)	43.5	37.4	25.1	27.5	50	48.1	17.1	54.4
Property valuation (median, in EUR thousand)	183	137.2	170	177.5	238.4	175	109.7	260

EDW data: Share of mortgage loans covered by our data (% to total)



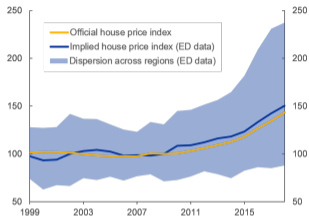
(a) Over the full period 1999-2018

(b) By year of origination

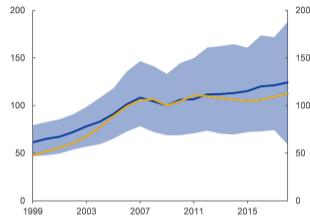
Notes: Sum of original balance of loans of the EDW dataset over total new business volumes from the MFI Interest Rate Statistics of the ECB.

EDW data: House price indexes (2009=100)

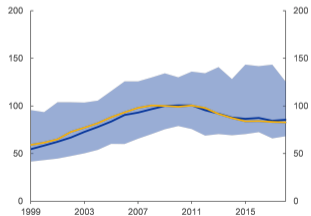
Germany



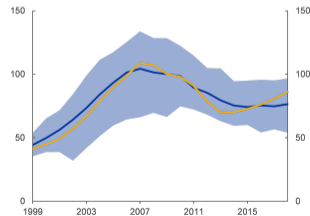
France



Italy

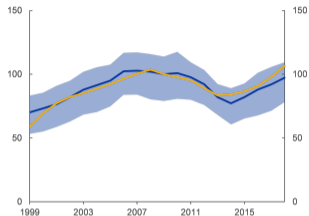


Spain

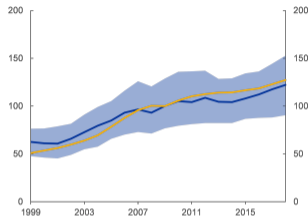


EDW data: House price indexes (2009=100)

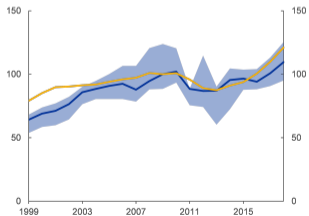
The Netherlands



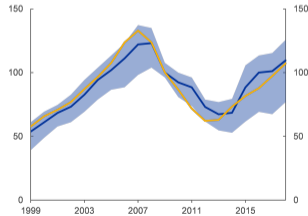
Belgium



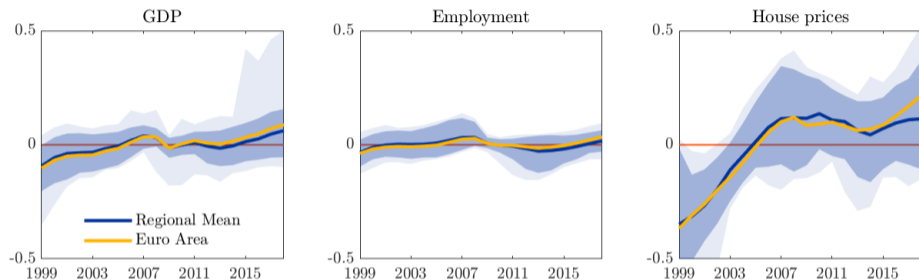
Portugal



Ireland



Key variables in our dataset



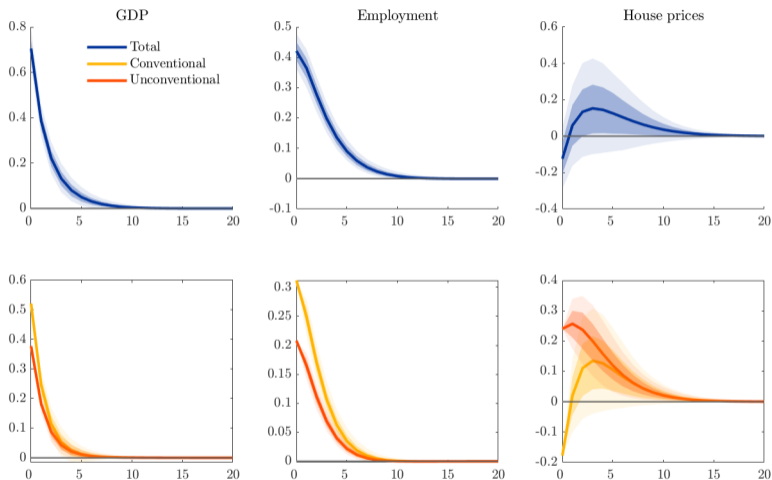
Notes: Demeaned log variables. The yellow line depicts euro area aggregate data, while the dark blue line the cross-regional mean of the variable. The dark (light) blue shading indicates 10th and 90th (1st and 99th) percentiles of the regional distribution.

Methodology - Baseline model

Panel VAR with annual data from 1999 to 2018

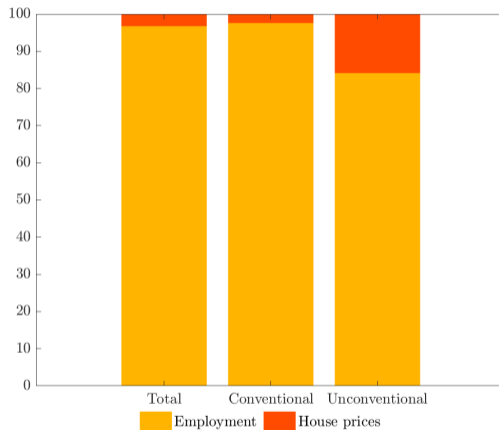
- ▶ Endogenous variables: real GDP, employment and house prices
- ▶ Exogenous variable: monetary policy shock (EA-MPD [Altavilla et al., 2019](#)), as "genuine" surprises in OIS yield curve (net of information shocks)
 - ▶ Conventional (short-term): 3-month OIS rate changes
 - ▶ Unconventional (long-term): 10-year OIS rate changes
 - ▶ Total monetary policy shock: sum of conventional and unconventional shocks
 - ▶ Weighted aggregation to annual frequency
- ▶ Mean group estimation ([Pesaran and Smith, 1995](#)): region-specific impacts of MP
- ▶ Recursive structure, with the first variable as the most endogenous one

Impulse response functions to an expansionary monetary policy shock



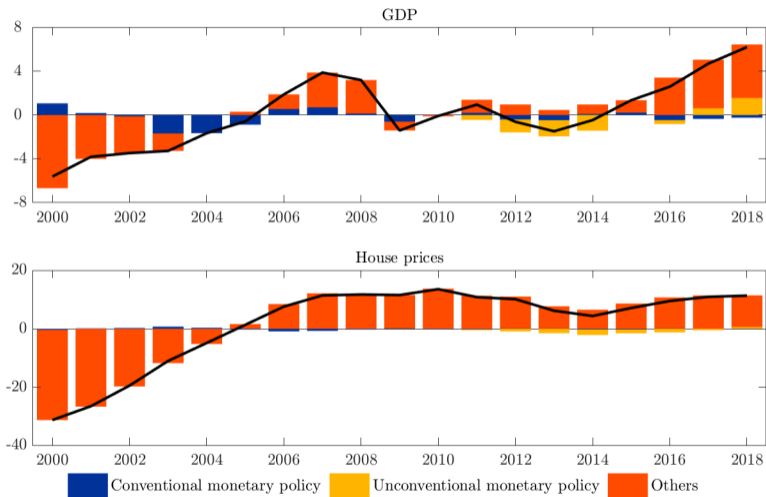
Notes: The size of the monetary policy shock is calculated as its mean absolute value, which is 5.2 basis points for the total, 4.6 basis points for the conventional and 1.7 basis points for the unconventional monetary policy shock. The y-axis reports the percentage change in (detrended) levels of each variable over the considered horizon. The x-axis reports the years. Solid lines denote point estimates and light (dark) shaded areas 95 percent (68 percent) confidence bands.

Importance of housing and employment channels



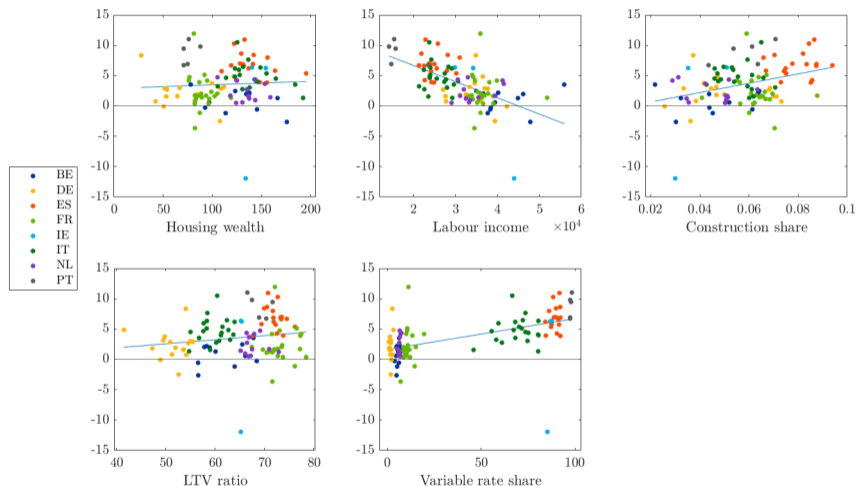
Notes: The y-axis shows the share of the contribution of employment and house prices out of the sum of their contributions to the GDP response to a total, conventional and unconventional monetary policy shock.

Historical decomposition of GDP and house prices



Notes: The y-axis reports the (detrended) level of (cross-regional average) GDP (upper chart) and house prices (lower chart) as well as the contributions of conventional and unconventional monetary policy shocks and other (unidentified) factors.

Heterogeneous monetary policy impact across regions



Notes: The y-axis reports the cumulative percentage change in (detrended) levels for GDP 5 years after an accommodative monetary policy shock. The x-axis reports the regional housing wealth (thousand euros per household), labour income (euros per employee, at 2015 prices), construction share (percent of value added), LTV ratio (percent), share of variable-rate loans (percent of total loans). Each dot represents a region.

Relationship between monetary policy impact and regional factors

(a) Dependent variable: <i>Impact of TMP shock</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Compensation per employee	-4.934***	-4.316***				-4.253***	-4.470***	-4.060**
Housing wealth	0.639					-1.011	-0.733	0.704
Homeownership rate		0.028**						
House price level		0.299						
Share of construction in GVA			0.581***			0.214*	0.200*	0.014
Share of manufacturing in GVA			0.063**			0.057**	0.057**	0.069***
Share of variable-rate mortgages				0.027***		0.002	0.013	0.020
Lending activity					0.598	1.511*	1.328	-0.437
Demographics controls	✓	✓	✓	✓	✓	✓	✓	✓
Vulnerable dummy	-	-	-	-	-	-	✓	-
Country dummies	-	-	-	-	-	-	-	✓
Observations	105	105	105	105	105	105	105	105
R-squared	0.424	0.439	0.189	0.324	0.015	0.494	0.501	0.538

Notes: The table present regressions of the cumulative monetary policy impact on real GDP at the regional level on regional factors (compensation per employee in logs, housing wealth in logs, homeownership rate in percent, the average house price level in logs, the share of construction and manufacturing in GVA, the share of variable-rate mortgages in percent, and a proxy for lending activity). Housing wealth is computed as the product of the homeownership rate and the average house price level. The proxy for lending activity is computed as the product of housing wealth and the LTV ratio. Demographics controls include total employment and population density at the regional level. The Vulnerable dummy is a binary variable that takes value one for regions of Italy, Spain, Portugal and Ireland, and zero for regions of Germany, France, the Netherlands and Belgium. A constant is included. An outlier is excluded. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Concluding remarks

- ▶ Important role of the housing channel in the transmission of unconventional monetary policy
- ▶ The transmission of monetary policy to the economy is heterogeneous across regions
- ▶ Monetary policy has a larger impact in regions with lower labour income and more widespread homeownership
 - ▶ Poorer regions stand to benefit the most from monetary policy accommodation
 - ▶ While the easing of monetary policy is found to mitigate regional inequality through its stimulus to the economy, the unintended consequences of the ongoing normalisation warrant close monitoring
- ▶ Overall, a proper assessment of the monetary policy transmission should not neglect the housing market, with its multiple sources of propagation and its pronounced local dimension

Thank you for your attention!

Additional slides

Structural VAR

$$AY_{i,t} = BY_{i,t-1} + \Gamma X_t + \Delta \epsilon_{i,t} \quad (1)$$

- ▶ with $Y_{i,t}$ a vector of **endogenous variables** for region i and X_t a vector of **common exogenous variables** at time t , while A , B , Γ and Δ are matrices of **structural parameters**, in particular:
 - ▶ A measures contemporaneous relations among endogenous variables
 - ▶ Γ determines the direct impact of exogenous variables on endogenous variables
- ▶ **Mean group estimation (Pesaran and Smith, 1995)**
 - ▶ Allows for cross-regional heterogeneity
 - ▶ Accounts for cross-sectional dependence of residuals

Methodology

- ▶ Three-variable model with **real GDP**, **employment** and **house prices** as endogenous variables $Y_{i,t} = [GDP_{i,t}, EMP_{i,t}, HP_{i,t}]$
- ▶ Monetary policy shock as exogenous variable $X_t = MP_t$
- ▶ Assume a **recursive structure**, with the first variable as the most endogenous variable

$$A = \begin{bmatrix} 1 & \alpha_{12} & \alpha_{13} \\ 0 & 1 & \alpha_{23} \\ 0 & 0 & 1 \end{bmatrix} \quad (2)$$

$$\Gamma = \begin{bmatrix} \gamma_1 \\ \gamma_2 \\ \gamma_3 \end{bmatrix} \quad (3)$$

Methodology

$$A^{-1}\Gamma = \begin{bmatrix} 1 & -\alpha_{12} & -\alpha_{13} + \alpha_{12}\alpha_{23} \\ 0 & 1 & -\alpha_{23} \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \gamma_1 \\ \gamma_2 \\ \gamma_3 \end{bmatrix} = \begin{bmatrix} \gamma_1 - \alpha_{12}\gamma_2 - (\alpha_{13} + \alpha_{12}\alpha_{23})\gamma_3 \\ \gamma_2 - \alpha_{23}\gamma_3 \\ \gamma_3 \end{bmatrix} \quad (4)$$

Impact of monetary policy on GDP

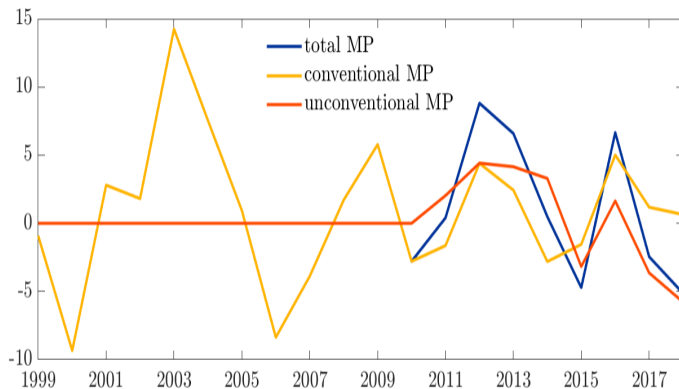
- ▶ Direct and unidentified factors: γ_1
- ▶ **Employment:** $-\alpha_{12}\gamma_2$
- ▶ **Housing channel:** $-(\alpha_{13} + \alpha_{12}\alpha_{23})\gamma_3$

Identification of monetary policy shocks

	CMP_d	UMP_d	INF_d
$\Delta OIS3M_d$	+	0	+
$\Delta OIS10Y_d$	0	+	+
ΔSP_d	-	-	+

These restrictions imply that a positive conventional (unconventional) monetary policy shock induces an increase in the 3-month (10-year) OIS interest rate, a decrease in the stock price and no movement in the 10-year (3-month) OIS interest rate, while a positive information shock is associated with an increase in all variables.

Identification of monetary policy shocks



Notes: The chart shows the time series of the (genuine) monetary policy shocks at annual frequency resulting from the weighting procedure.

Relationship between monetary policy impact and regional factors

(b) Dependent variable: <i>Impact of CMP shock</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Compensation per employee	-3.903***	-3.932***				-3.494***	-3.412***	-3.747*
Housing wealth	0.187					1.141	1.036	1.612
Homeownership rate		0.006						
House price level		0.424						
Share of construction in GVA			0.560***			0.373***	0.378***	-0.022
Share of manufacturing in GVA			0.038			0.027	0.026	0.042
Share of variable-rate mortgages				0.018***		-0.003	-0.007	0.006
Lending activity					-0.094	-0.579	-0.510	-0.650
Demographics controls	✓	✓	✓	✓	✓	✓	✓	✓
Vulnerable dummy	-	-	-	-	-	-	✓	-
Country dummies	-	-	-	-	-	-	-	✓
Observations	105	105	105	105	105	105	105	105
R-squared	0.268	0.270	0.172	0.149	0.014	0.322	0.323	0.451

Notes: The table present regressions of the cumulative monetary policy impact on real GDP at the regional level on regional factors (compensation per employee in logs, housing wealth in logs, homeownership rate in percent, the average house price level in logs, the share of construction and manufacturing in GVA, the share of variable-rate mortgages in percent, and a proxy for lending activity). Housing wealth is computed as the product of the homeownership rate and the average house price level. The proxy for lending activity is computed as the product of housing wealth and the LTV ratio. Demographics controls include total employment and population density at the regional level. The Vulnerable dummy is a binary variable that takes value one for regions of Italy, Spain, Portugal and Ireland, and zero for regions of Germany, France, the Netherlands and Belgium. A constant is included. An outlier is excluded. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Relationship between monetary policy impact and regional factors

(c) Dependent variable: <i>Impact of UMP shock</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Compensation per employee	-1.874**	-1.934**				-3.792***	-4.051***	-4.741**
Housing wealth	1.010					-1.701	-1.368	-1.316
Homeownership rate		0.014						
House price level		1.214						
Share of construction in GVA			0.114			-0.090	-0.106	-0.134
Share of manufacturing in GVA			0.060**			0.075***	0.076***	0.076**
Share of variable-rate mortgages				0.010**		-0.014	-0.001	-0.006
Lending activity					1.032**	3.240***	3.021**	1.770
Demographics controls	✓	✓	✓	✓	✓	✓	✓	✓
Vulnerable dummy	-	-	-	-	-	-	✓	-
Country dummies	-	-	-	-	-	-	-	✓
Observations	105	105	105	105	105	105	105	105
R-squared	0.116	0.115	0.079	0.085	0.076	0.217	0.227	0.251

Notes: The table present regressions of the cumulative monetary policy impact on real GDP at the regional level on regional factors (compensation per employee in logs, housing wealth in logs, homeownership rate in percent, the average house price level in logs, the share of construction and manufacturing in GVA, the share of variable-rate mortgages in percent, and a proxy for lending activity). Housing wealth is computed as the product of the homeownership rate and the average house price level. The proxy for lending activity is computed as the product of housing wealth and the LTV ratio. Demographics controls include total employment and population density at the regional level. The Vulnerable dummy is a binary variable that takes value one for regions of Italy, Spain, Portugal and Ireland, and zero for regions of Germany, France, the Netherlands and Belgium. A constant is included. An outlier is excluded. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Robustness checks

- ▶ Additional common components: the set of exogenous variables is expanded to include the euro area GDP, employment and house prices
- ▶ A pooled fixed-effects estimator
- ▶ Alternative structural identification strategy

References I

- Altavilla, Carlo, Luca Brugnolini, Refet S. Gürkaynak, Roberto Motto, and Giuseppe Ragusa.** 2019. “Measuring euro area monetary policy.” *Journal of Monetary Economics*, 108(C): 162–179.
- Altavilla, Carlo, Wolfgang Lemke, Tobias Linzert, Jens Tapking, and Julian von Landesberger.** 2021. “Assessing the efficacy, efficiency and potential side effects of the ECB’s monetary policy instruments since 2014.” European Central Bank Occasional Paper Series 278.
- Calza, Alessandro, Tommaso Monacelli, and Livio Stracca.** 2013. “Housing Finance And Monetary Policy.” *Journal of the European Economic Association*, 11: 101–122.
- Causa, Orsetta, Nicolas Woloszko, and David Leite.** 2019. “Housing, wealth accumulation and wealth distribution: Evidence and stylized facts.” OECD Publishing OECD Economics Department Working Papers 1588.
- Corsetti, Giancarlo, Joao B. Duarte, and Samuel Mann.** 2020. “One Money, Many Markets: Monetary Transmission and Housing Financing in the Euro Area.” International Monetary Fund IMF Working Papers 2020/108.

References II

- Del Negro, Marco, and Christopher Otrok.** 2007. “99 Luftballons: Monetary policy and the house price boom across U.S. states.” *Journal of Monetary Economics*, 54(7): 1962–1985.
- Ghent, Andra C., and Michael T. Owyang.** 2010. “Is housing the business cycle? Evidence from US cities.” *Journal of Urban Economics*, 67(3): 336–351.
- Gianinazzi, Virginia, Lorian Pelizzon, and Alberto Plazzi.** 2018. “Residential mortgage defaults and positive equity: Lessons from europe.” USI Working Paper.
- Goodhart, Charles, and Boris Hofmann.** 2008. “House Prices, Money, Credit and the Macroeconomy.” European Central Bank Working Paper Series 888.
- Hauptmeier, Sebastian, Frédéric Holm-Hadulla, and Katerina Nikalexi.** 2020. “Monetary policy and regional inequality.” European Central Bank Working Paper Series 2385.
- Huber, Florian, and Maria Teresa Punzi.** 2020. “International Housing Markets, Unconventional Monetary Policy, And The Zero Lower Bound.” *Macroeconomic Dynamics*, 24(4): 774–806.
- Hülsewig, Oliver, and Horst Rottmann.** 2021. “Euro area house prices and unconventional monetary policy surprises.” *Economics Letters*, 205(C).

References III

- Lenza, Michele, and Jirka Slacalek.** 2021. “How Does Monetary Policy Affect Income and Wealth Inequality? Evidence from Quantitative Easing in the Euro Area.” C.E.P.R. Discussion Papers 16079.
- Musso, Alberto, Stefano Neri, and Livio Stracca.** 2011. “Housing, consumption and monetary policy: How different are the US and the euro area?” *Journal of Banking & Finance*, 35(11): 3019–3041.
- Nocera, Andrea, and Moreno Roma.** 2017. “House prices and monetary policy in the euro area: evidence from structural VARs.” European Central Bank Working Paper Series 2073.
- Pesaran, M. Hashem, and Ron Smith.** 1995. “Estimating long-run relationships from dynamic heterogeneous panels.” *Journal of Econometrics*, 68(1): 79–113.
- Zhu, Bing, Michael Betzinger, and Steffen Sebastian.** 2017. “Housing market stability, mortgage market structure, and monetary policy: Evidence from the euro area.” *Journal of Housing Economics*, 37(C): 1–21.

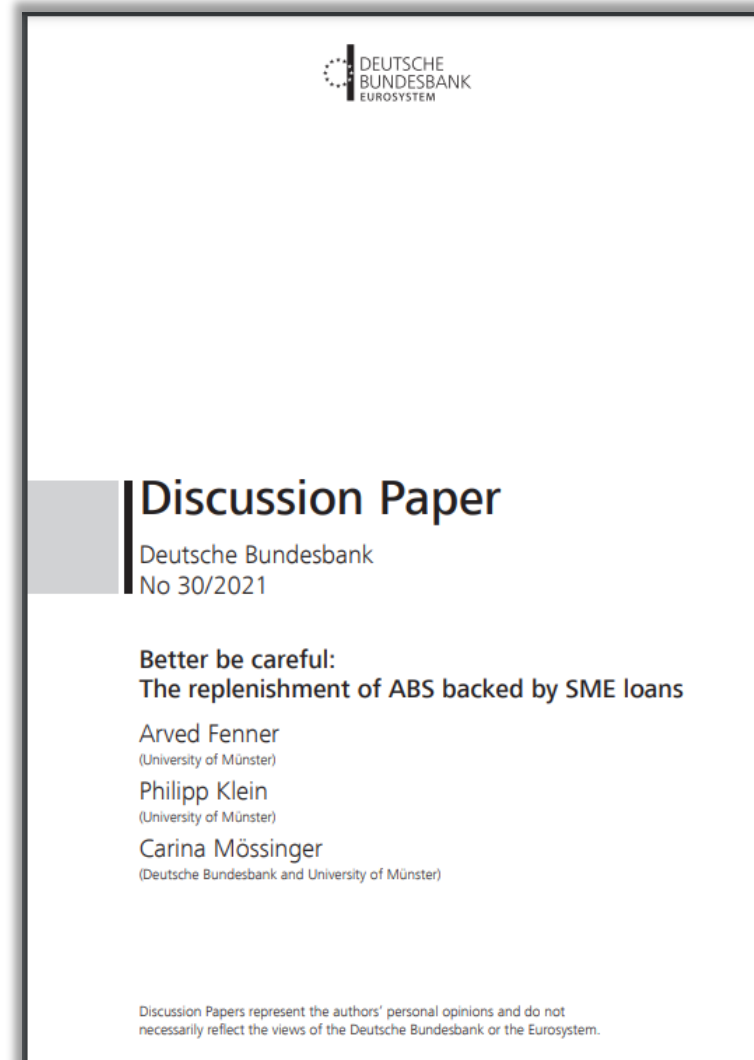
BETTER BE CAREFUL: THE REPLENISHMENT OF ABS BACKED BY SME LOANS

CARINA SCHLAM, DEUTSCHE BUNDESBANK

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