EU Benchmarks of Insolvency Frameworks and Main Determinants of Recovery Rates and Time to Recoveries for Bank Loans

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Contents

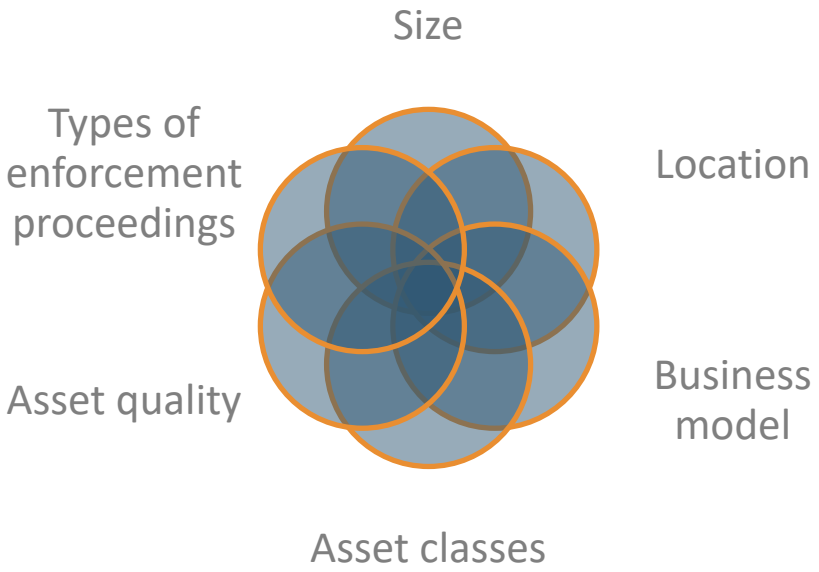
Context – European Commission Call for Advice (CfA)

- **The EBA receives Calls for Advice on a range of topics** where the European Commission (EC) requires further clarification.
    - In response to a call for advice, **the EBA conducts a technical analysis** and usually issues an Opinion and publishes an evidence-based Report.

- **CfA on Benchmarks of National Enforcement Frameworks - Objective**
    - Exercise to produce 27 EU Benchmarks and understand the efficiency of national enforcement procedures.
        - 2019 Jul/Dec: 1st phase of data collection;
        - 2020 Apr: preliminary report delivered;
        - 2020 May-Oct: 2nd phase of data collection, final benchmarks, complete data analysis and final report.

Data quality issues: Sample of reporting banks

Representativeness of bank sample?



- Ad-hoc exercise – **participation not mandatory** for banks.
- **Representativeness:** No data available, number of banks too small.

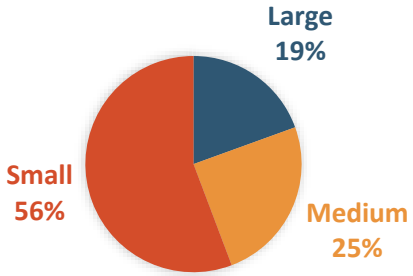
  → The EBA proposed **310 banks** for inclusion based on **banks' size, business model and jurisdiction** – the selection was up to the national authorities.
- **Data collection on individual basis** – would such data be held for all subsidiaries?

Data quality issues: Sample of reporting banks

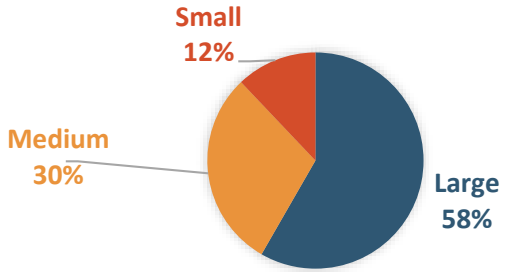
Ending up with **data of 160 banks:**

- Not all had data to report or reported partially filled templates;
- Some were unable to obtain the data or considered the data collection too burdensome to participate;
- Nevertheless, **a rich dataset of over 1.5 million loans collected – unevenly dispersed across asset classes** (e.g. 4000 for corporates, over 800.000 for retail – other consumer loans) and **not always representative** of business models and size of banks.

BANKS PROVIDING LOANS FOR CORP&SME BY SIZE



NUMBER OF LOANS FOR CORP&SME BY BANK SIZE

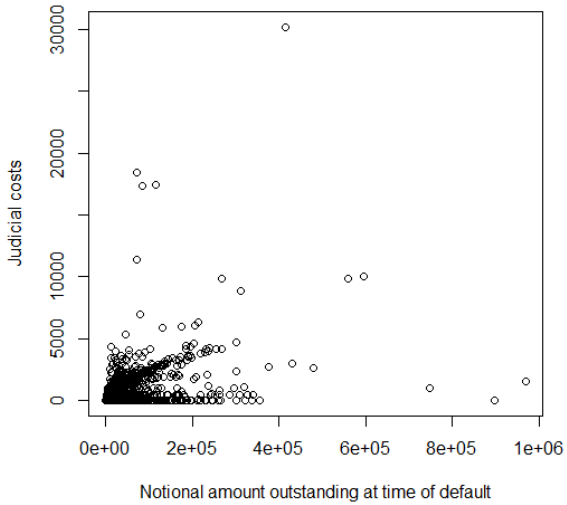


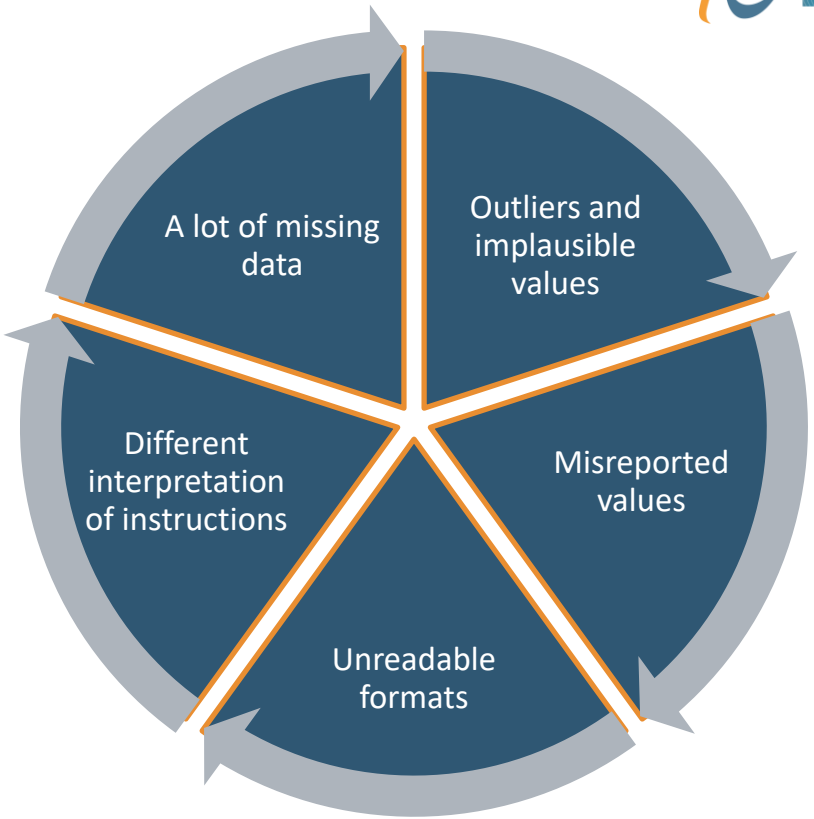
Data quality issues: Reported data

Issues:

- Ad-hoc data request;
- First time such data is requested;
- Loan level;
- Data collection in Excel;

→ **Poor data quality.**





Data quality issues – What to do?

Steps taken to improve the benchmarks:

- **Datasets cleaned** to **maximize the amount of useful data**, **reduce the number of issues** and ensure **consistency in the dataset** used for analysis;
- Multiple rounds of **DQ reports** and **bilateral contact** with authorities;
- **Outlier analysis;**
- **Thresholds for numerical variables** → do negative values make sense?
- Display both **simple and weighted averages.**

- Using **formulae for recovery rates**, taking into account ratios calculated from the reported numerical values as opposed to ratios reported by banks:

$$\textbf{Gross Recovery Rate} = \frac{\text{Gross Recovery Amount}}{\text{Notional amount outstanding at time of default}}$$

$$\textbf{Net Recovery Rate} = \frac{\text{Net Recovery Amount}}{\text{Notional amount outstanding at time of default}}$$

$$\textbf{Judicial Cost to Recovery} = \frac{\text{Judicial Costs}}{\text{Notional amount outstanding at time of default}}$$

Time to Recovery: length of the recovery period (from the start of the formal enforcement procedure to the date of ultimate recovery).

Results - EU 27 simple averages: benchmarks by asset classes

Asset class	Gross Recovery Rate (%)		Net Recovery Rate (%)		Time to Recovery (years)		Judicial Cost to Recovery (%)	
	Simple Average at loan level	Simple Average by country	Simple Average at loan level	Simple Average by country	Simple Average at loan level	Simple Average by country	Simple Average at loan level	Simple Average by country
Corporates	40.4	44.6	36.8	41.6	3.4	3.3	1.4	2.7
SMEs	33.8	41.4	31.5	39.6	3.3	3.0	3.5	3.9
RRE	46.1	53.5	43.9	51.3	3.1	3.0	2.0	1.6
CRE	42.2	50.9	38.4	49.1	4.1	3.0	1.6	1.4
Retail – credit cards	25.2	52.1	21.0	48.7	2.3	2.3	5.4	6.4
Retail – other consumer loans	38.2	41.7	32.9	38.3	2.9	3.0	6.7	7.0

- **Collateralised lending including residential real estate and commercial real estate** present higher recovery rates than the remaining asset classes.
- **Retail credit cards** present the lowest recovery rates, but are characterised by the shortest recovery times.
- **Retail in general** (credit cards and other consumer loans) show the highest levels of judicial cost to recovery.
- **Loans to corporates** always present higher recovery rates than loans to SMEs, whereas the time to recovery tends to be rather similar for the two loan categories.
- **Loans to SMEs** also show one of the highest judicial cost to recovery.

Results - EU 27 Benchmarks

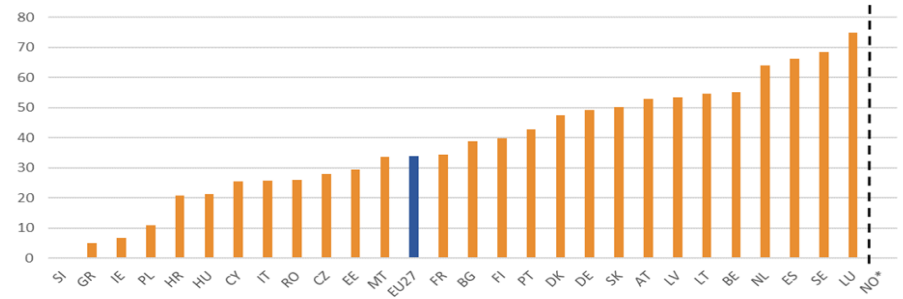
- **Very rich and unique information across the 27 EU MS (public good)**
- 37 Figures/charts and 61 Tables of data
- Different banks' business models and sizes
- Observations
- **Time span** (loans that started the enforcement before Dec-2015 and closed the enforcement before Dec-2018 and loans that started the enforcement after Dec-2015 and they were still ongoing in Dec-2018)

Recovery rates (gross and net), time to recovery and judicial cost to recovery for each asset class (27 EU simple average – two indicators: Simple Average at loan level and Simple Average by Country)

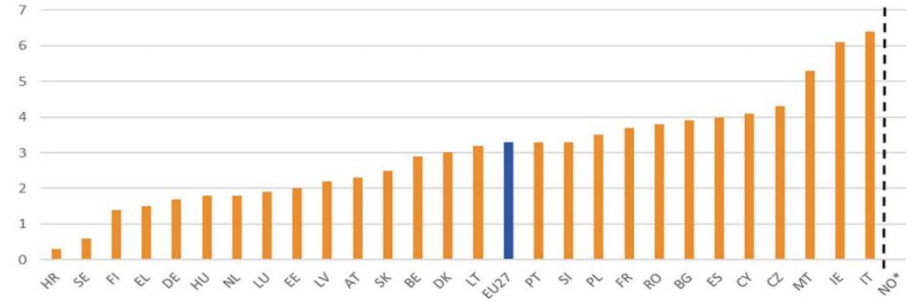
	Retail – credit cards			Retail – other consumer loans		
Asset class	Simple average at loan level	Simple average by country	Observations	Simple average at loan level	Simple average by country	Observations
Gross recovery rate (%)	25.2	52.1	338,544	38.2	41.7	885,349
Net recovery rate (%)	21.0	48.7	338,544	32.9	38.3	885,349
Time to recovery (years)	2.3	2.3	226,866	2.9	3.0	828,584
Judicial cost to recovery (%)	5.4	6.4	217,758	6.7	7.0	869,420

Results - EU 27 simple averages: SMEs benchmarks

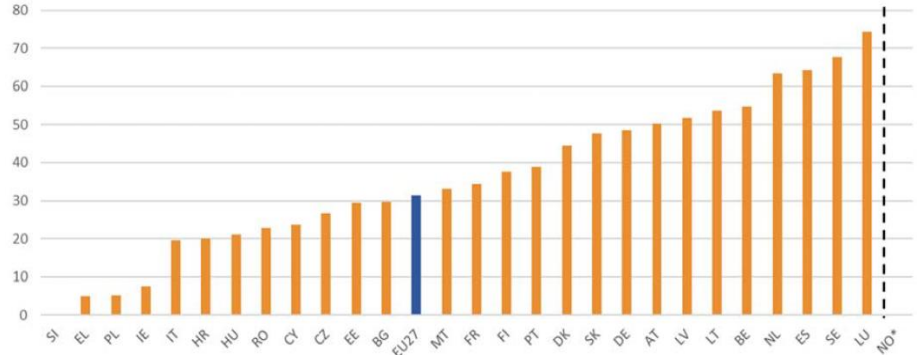
EU Benchmarks – **Gross Recovery rate (%)**, per EU Member-State – SMEs



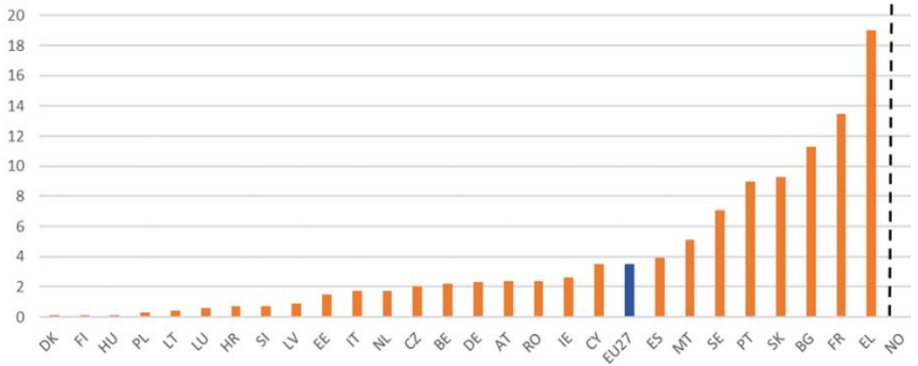
EU Benchmarks – **Time to Recovery (years)**, per EU Member-State – SMEs



EU Benchmarks – **Net Recovery rate (%)**, per EU Member-State – SMEs



EU Benchmarks – **Judicial Cost to Recovery (%)**, per EU Member-State – SMEs



Results - EU 27 simple averages: benchmarks (dispersion)

- **Dispersion across countries for all the benchmarks** under study is evident
- **The recovery rates show a strong dispersion**, with
  - **many observations with low recovery and**
  - **many with complete recovery**

- For instance, for **secured loans** that have **completed the enforcement procedure**:
  - The dispersion in the **recovery rates is higher for SMEs and Corporate than for Real Estate** (Commercial and Residential).
  - The **dispersion in the judicial costs to recovery are higher in Residential Real Estate and Commercial Real Estate**.

Recovery Rates (Gross and Net), Time to Recovery and Judicial Cost to Recovery per asset class (**27 EU simple average at loan level**) for **secured loans** that have **completed the enforcement procedure**

	Gross Recovery Rate (%)		Net Recovery Rate (%)		Time to Recovery (years)		Judicial Cost to Recovery (%)	
	25th per.	75th per.	25th per.	75th per.	25th per.	75th per.	25th per.	75th per.
Corporate	17.5	100.0	16.6	100.0	1.6	5.7	0.0	0.1
SMEs	13.9	100.0	7.4	100.0	1.2	5.0	0.0	1.3
Residential Real Estate	42.5	100.0	37.8	100.0	1.2	5.2	0.3	3.4
Commercial Real Estate	41.2	100.0	36.0	100.0	1.5	5.7	0.0	2.2
Retail: Credit Cards	-	100.0	-	100.0	0.4	3.3	0.0	1.6
Retail: Other consumer loans	-	95.0	-	86.7	2.1	6.9	0.0	0.7

Results - Data analysis and positive characteristics of the enforcement frameworks

Recovery rates
Time to Recovery

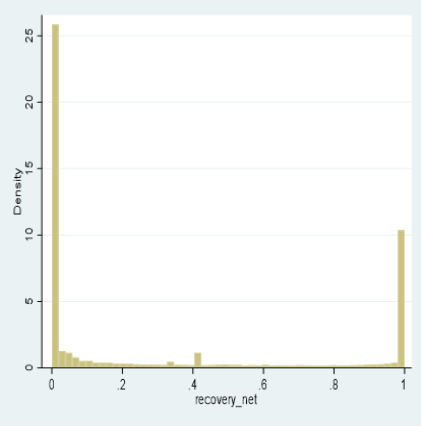
Recovery rate

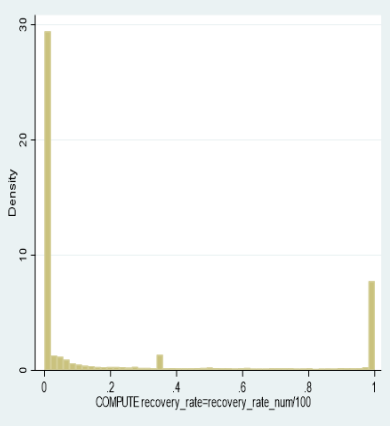
- The distributions are **bimodal with many observations with low recovery and many with complete recovery.**
- **Bimodal distributions** of bank loan recoveries are also found in Asarnow and Edwards (1995), Felsovalyi and Hurt (1998), Franks et al. (2004), Araten et al. (2004) and Caselli et al. (2008).

Time to recovery

- The analysis focuses on the **observed and expected duration of time until the end of the formal process of enforcement** (the event of interest).
- The statistical method is named **survival analysis and the survival time (of the formal process of enforcement)** is measured in years using the variable 'time to recovery' (predicting the duration of the event). For details, see Cox, 1972; and Allison, 2010).

Net recovery and recovery rate (Firms: Corporate and SMEs





Results - Data analysis and positive characteristics of the enforcement frameworks - Methodology

- Recovery rate

  The recovery rate is restricted to the interval between 0 and 1.

  - Due to the bounded nature of the dependent variable one cannot implement an ordinary least squares (OLS) regression since the predicted values from the OLS regression can never be guaranteed to lie in the unit interval.
  - We use logit models

  We **build successive models by enforcement qualitative characteristics**. Each qualitative characteristic is a dummy variable in the regression

  Cross-sectional analysis

  Clustered standard errors

  We have sampled data from a population using clustered sampling for the participating banks and we want to say something about the broader population of banks.

  - Given the sampling design, we **clustered standard errors by banks and by country of enforcement**.

Results - Data analysis and positive characteristics of the enforcement frameworks - Methodology

Type of debtor	Loan se-cured?	Outside or within insolven-cy?	Ques-tion ID	Pertinent performance indicators	[Coun-try code]	Instructions on how to fill in the ques-tionnaire
Corporate (legal entity)	Secured (specific rules)	Individual enforce-ment	1.1	Legal techniques to enable out-of-court enforcement of collateral available (no judgement on the underlying claim need-ed? Not even a court order needed?)? (ex-cluding financial collateral as per the Finan-cial Collateral Directive 2002/47 (as amended))		
			1.1.1	• For real estate collateral		*Yes/No answer*
			1.1.2	• For movable collateral [to mean tangi-ble moveable assets posed as collat-eral]		*Yes/No answer*
			1.2	Private sale allowed at creditor's discretion (public auction optional)?		
			1.2.1	• For real estate collateral		*Yes/No answer*
			1.2.2	• For movable collateral		*Yes/No answer*
			1.3	Seizure of collateral on own book permit-ted?		
			1.3.1	• For real estate collateral		*Yes/No answer*
			1.3.2	• For movable collateral		*Yes/No answer*
			1.4	Absence of long moratoria that suspend enforcement of collateral? ("Long" meaning moratoria designed to give "breathing space" to a debtor to continue operations without paying debt as opposed to short-term moratoria of a few weeks needed to convene meetings for a quick round of negotiations on restructuring or on organi-sational matters regarding the insolvency.)		*Yes/No answer*
			1.5	Entry test for restructuring proceedings to avoid abuse of moratoria?		*Yes/No answer*
		Insolvency proceedings	1.6	Proceeds from the collateral earmarked for the secured creditor? ("no need to share")		*Yes/No answer*
			1.7	Proceeds from the collateral accessible before the collective proceedings for unse-cured creditors are taking their course? ("not need to wait")		*Yes/No answer*
			1.8	Private sale allowed at creditor's discretion (public auction optional)?		*Yes/No answer*
			1.9	Courts/judges specialised in insolvency cases?		*Yes/No answer*
			1.10	Set time requirements for all or most of the steps of insolvency proceedings?		*Yes/No answer*
			1.11	Electronic communication with courts and insolvency administrators?		*Yes/No answer*

Qualitative characteristics (EC Questionnaire) – examples of questions

Report "*Analysis of the individual and collective loan enforcement laws in the EU Member States*", 2019.

Results - Data analysis and positive characteristics of the enforcement frameworks - Methodology

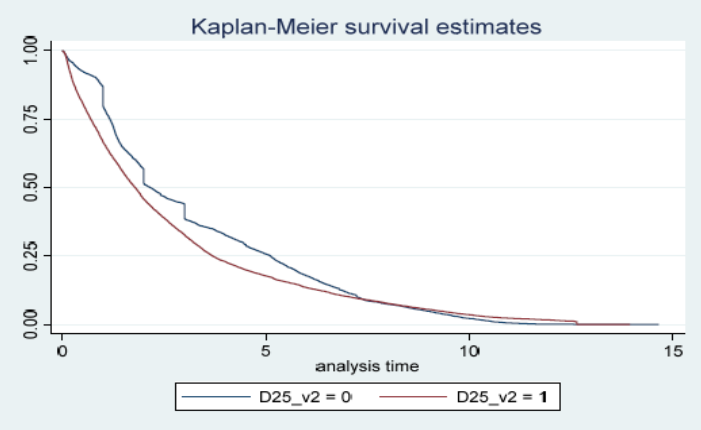
Variables	Description
Time to recovery (years) of the participating bank	The length of the recovery period (as part of the recovery rate process, from the start of the formal enforcement status to the date of ultimate recovery from the formal enforcement procedures).
Efficiency 2018 (Ratio) of the participating bank	Noninterest expense before foreclosed property expense, amortization of intangibles, and goodwill impairments as a percent of net interest income (fully taxable equivalent, if available) and noninterest revenues, excluding only gains from securities transactions and nonrecurring items. For European banks, expenses include foreclosed property and amortization of intangibles and income includes security transactions. Source: SNL Financial Fundamentals.
Average GDP growth between 2013 and 2018: avgGDP_growth_13_18	Average GDP growth between 2013 and 2018, per EU member. Source: Eurostat.
Log of the average Real GDP per capita between 2013 and 2018: lnaGDPpercap13_18	Log of the average Real GDP per capita between 2013 and 2018, per EU member. Source: Eurostat.
Legal origin: d_Legalorigin	Legal origin based on four groups corresponding to type of legal system of each EU member: 1=Germanic; 2=French; 3=Anglo-Saxon; or 4=Nordic. French Law: BE, ES, FR, GR, IT, LT, LU, MT, NL, PT, RO; Germanic Law: AT, BG, HR, CZ, EE, DE, HU, LV, PL, SK, SI; Anglo-Saxon Law: CY, IE; Nordic Law: DK, FI, SE, NO. Source : La Porta et al. 1997; 1998.
Size category of the participating bank: d_bsize_cat2	Size category of the bank: 1=Small; 2=Medium; or 3=Large. Small banks (total assets below 10 billion EUR). Medium-sized banks (total assets between 10 and 50 billion EUR). Large banks (total assets above 50 billion EUR).
Business model of the participating bank: d_b_BM	Business model of the participating bank: 1=Cross-border Universal; 2=Retail-oriented; 3=Corporate-oriented; or 4=Other specialised. Source: EBA Staff Paper on Business Models.

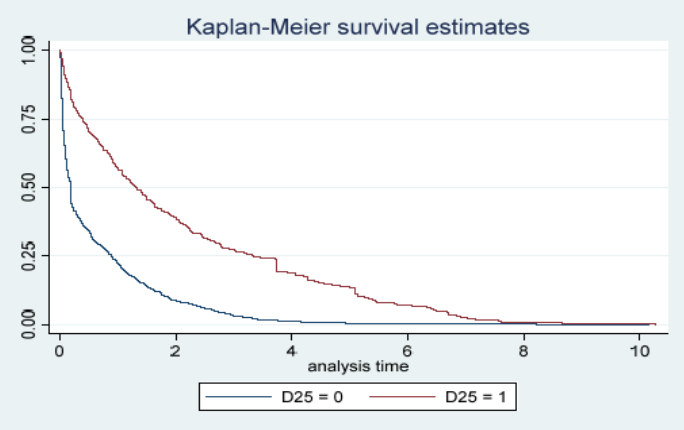
Results - Data analysis and positive characteristics of the enforcement frameworks – Time to Recovery – Legal Origin (examples)

In addition, **the legal origin (Germanic, French, Anglo-Saxon, Nordic) of the judicial system underlying the enforcement framework is found to explain the recovery rates and time to recovery** (also found in previous studies)

Firms (Corporate and SMEs) – for example, as regards creditors' chances to impact on the proceedings through creditor committees (D25):
- higher recovery rate but also with a shorter time to recovery if the legal origin is Germanic.
- however, significantly higher time to recovery if the legal origin is Nordic.

Estimated survival curves for the characteristic D25, by legal origin (left panel: Germanic; right panel: Nordic)





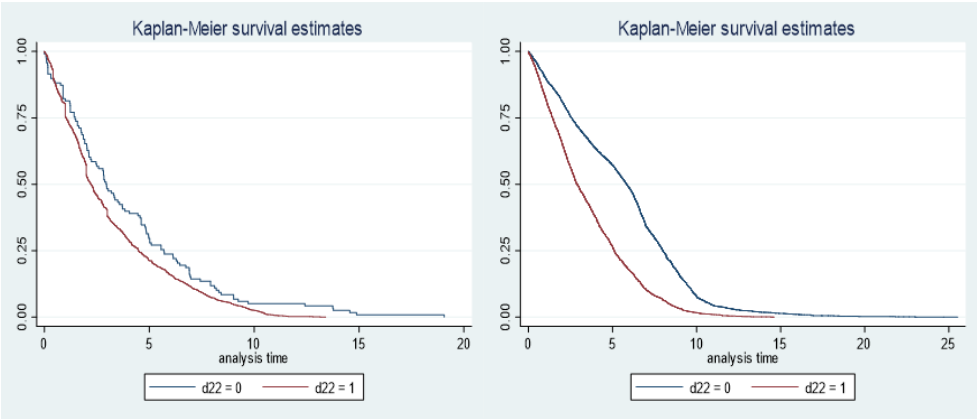
Results - Data analysis and positive characteristics of the enforcement frameworks

- **Both types of reforms (legal framework characteristics or judicial capacity) are important** to improve the efficiency of the recoveries;
- **For the legal framework** (for instance):
  - out-of-court enforcement of collateral;
  - absence of long moratoria that suspend enforcement of collateral;
  - possibility for creditors to influence the proceedings through creditor committees;
  - absence of privileges (prior rank)
  - triggers for collective insolvency proceeding taking into consideration debtor's future positive/negative cash flow;
- **For the judicial capacity** (for instance):
  - the existence of courts/judges specialised in insolvency cases;
  - the possibility of electronic communication with courts and insolvency administrators.

- **In most of the cases (i.e. with exceptions), the same positive characteristics (factors) contribute to both:**
  - ↗ **increase the recovery rates**; and
  - ↘ **reduce the time to recovery**;

In addition, **the legal origin was found to be an important factor** explaining the recovery rates and time to recovery.

Estimated survival curves for the characteristics of the enforcement frameworks D22, by legal origin (left chart: Germanic; right chart: French)



Policy discussions

- This Final Report responds to the CfA by providing insights on the formal enforcement procedures.
- This CfA on insolvency practices is **the first exercise of its kind in the EU** and the results need to be interpreted with some caution. **The report contains a large amount of unique information.**
- The Final Report presents:
  - the EU Benchmarks for Recovery Rates, Times to Recovery and Judicial Costs to Recovery;
  - econometric analysis to study possible positive characteristics of the enforcement frameworks, i.e. characteristics that tend to improve the recovery outcomes.
- Progress in harmonising national insolvency practices is a necessary condition for the CMU.
- Regular and standardised information about the evolution of individual national regimes and legal characteristics that contribute to more efficient processes is valuable.
- The findings inform the EBA and the European Commission about possible positive characteristics of the enforcement frameworks at a time when insolvencies/NPLs can be expected to rise.

ANNEX

Main indicators

Gross recovery rate:

- Total amount recovered through the formal enforcement process before or after its completion, as a share of the total defaulted exposure (in terms of notional amount outstanding at time of default).

Net recovery rate:

- Total net recovered (i.e. net of total costs for recovery through the formal enforcement process before or after its completion) as a share of the total defaulted exposure (again, in terms of notional amount outstanding at time of default).

Time to recovery:

- Length (in years) of the recovery period. Specifically, as part of the recovery process, the time is recorded from the start of the formal enforcement status to the date of ultimate recovery from the formal enforcement procedures.

Judicial cost to recovery:

- Judicial costs as a share of the notional amounts at the time of default.

Main indicators

Simple average at loan level:

- Total number of observations per variable (i.e., a simple average over the total number of loans in the 27 EU Member States).
  It is therefore influenced by the EU Members States with the highest number of observations.

Simple average by country:

- Simple average of all EU Member States' simple averages.
  It is therefore less biased towards the countries with the highest number of observations.

Formal enforcement procedures:

Include cases in which the judicial system and the respective enforcement framework is used (e.g. not only court decisions but also possible simplified legal processes before going to court). **All cases of formal/legal enforcement procedures should be included (**e.g. asset seizure possibilities; lawsuit filing; court judgements in relation to enforcement of unsecured claims) and may be initiated either by a bank or any third party for the same loan. This also includes different types of collateral/guarantees, such as an ECA guarantee, PRI´s insurance, bank guarantee and similar. If the judicial system of the respective jurisdiction treats the following proceedings as formal processes of debt collection (i.e. executory proceedings; executory auctions; and auctions performed by auction companies - also called voluntary in the respective legislation), these cases should be included in the exercise.

Recovery rate

- We test the impact of enforcement/insolvency framework (independent variables) onto the recovery rate (dependent variable).
- We apply cross-sectional estimation (average effect) to empirically prove the relationship.
- We use a multivariate approach to investigate the degree to which judicial efficiency affects the level of recovery rates across the EU Member States.

- The data collected in this study shows that for the recovery rates, the distributions across different asset classes are bimodal, i.e. there are many observations with low rates of recovery and many with high rates of (or complete) recovery. Bimodal distributions of bank loan recoveries are also found in Asarnow and Edwards (1995) and other studies. Dullmann & Trapp, 2004 , utilize a logit-normal distribution and empirically analyse the recovery rates. Following a proposal by Schonbucher, 2003, the recovery rate is modelled as a logit transformation of a normally distributed random variable Yj. The recovery rate R (Yj (X)) follows a logit–normal distribution
- When controlling for various qualitative factors in the EU enforcement frameworks (including insolvency), we confirm that: enforcement/insolvency qualitative characteristics matters as the total recovery rate depends on some characteristics.
    - More precisely,
        - some characteristics are **associated to higher recovery rates**.
        - on the other hand, some other characteristics of the country enforcement characteristics are significantly associated to lower recovery rates.

Time to Recovery

- the analysis focuses on the observed and expected duration of time until the end of the formal process of enforcement (the event of interest).

- the statistical method applied is survival analysis, and the survival time of the formal process of enforcement is measured in years using the variable Time to Recovery.

- the study uses the Cox proportional hazards model (Cox model, a semi-parametric method) and to validate the model's predictive ability it uses both the Kaplan-Meier survival curves and the log-rank test for equality of survivor functions (for details, see Cox, 1972; and Allison, 2010).

Results - Data analysis and positive characteristics of the enforcement frameworks – Recovery rates - Regressions (examples)

VARIABLES	FIRMS (1) Recovery Rate	FIRMS (2) Recovery Rate	FIRMS (3) Recovery Rate	FIRMS (4) Recovery Rate	FIRMS (5) Recovery Rate	FIRMS (6) Recovery Rate	FIRMS (7) Recovery Rate	FIRMS (8) Recovery Rate	FIRMS (9) Recovery Rate
D1 Out-of-court enforcement of collateral	1.847 ***								
	(3.020)								
D2 Out-of-court enforcement of collateral, real estate collateral		1.704 **							
		(2.500)							
D3 Out-of-court enforcement of collateral, tangible moveable assets			1.704 **						
			(2.500)						
D10 Absence of long moratoria that suspend enforcement of collateral				1.848 ***					
				(3.020)					
D25 Creditors' chances to impact on the proceedings through creditor committees					6.150 ***				
					(3.020)				
D27 Absence of privileges (prior rank) for debt towards government, social security						1.845 *			
						(3.020)			
D28 Absence of privileges (prior rank) for wages, pension schemes							1.845 ***		
							(3.020)		
D29 Absence of other general privileges for specific types of creditors/debt								6.860 ***	
								(3.020)	
D30 Pre-pack' insolvency (or restructuring) available for SMEs									6.860 ***
									(3.010)
Time to recovery (years)	-0.105 **	-0.109 *	-0.109 *	-0.105 **	-0.105 **	-0.105 **	-0.105 **	-0.105 **	-0.105 **
	(-2.120)	(-1.920)	(-1.920)	(-2.120)	(-2.120)	(-2.120)	(-2.120)	(-2.120)	(-2.120)
Efficiency Ratio 2018	0.022	0.034	0.034	0.022	0.022	0.022	0.022	0.022	0.022
	(1.080)	(1.510)	(1.510)	(1.090)	(1.080)	(1.080)	(1.080)	(1.080)	(1.080)
lnaGDPpercap13_18	-0.046	-0.223	-0.223	-0.047	-0.045	-0.045	-0.045	-7.379 ***	-7.379 ***
	(-0.100)	(-0.400)	(-0.400)	(-0.100)	(-0.100)	(-0.100)	(-0.100)	(-2.880)	(-2.880)
d_legalorigin (reference =2)									
Germanic Law	-4.063 ***	-3.829 ***	-3.829 ***	-4.065 ***	-4.062 ***	-2.218	-2.218 *	9.271 **	2.411
	(-2.800)	(-2.610)	(-2.610)	(-2.800)	(-2.800)	(-1.890)	(-1.890)	(2.500)	(1.420)
Anglo-Saxon Law	-6.279 ***	-5.716 ***	-5.716 ***	-6.284 ***	-6.277 ***	-2.587	-2.587 *	9.071 **	2.211
	(-3.100)	(-2.740)	(-2.740)	(-3.100)	(-3.100)	(-1.690)	(-1.690)	(2.230)	(1.040)
Nordic Law	-1.663	-1.259	-1.259	-3.511 **	2.642	-1.663	0.182 ***	17.745 ***	10.885 ***
	(-1.160)	(-0.850)	(-0.850)	(-2.060)	(1.540)	(-1.160)	(0.130)	(2.860)	(2.710)
d_bsize_categ2 (reference =2)									
Small Bank	0.341	0.088	0.088	0.343	0.340	0.340	0.340	0.340	0.340
	(0.590)	(0.150)	(0.150)	(0.590)	(0.590)	(0.590)	(0.590)	(0.590)	(0.590)
Large Bank	1.148 *	0.892	0.892	1.153 *	1.147 *	1.147 **	1.147 *	1.147 *	1.147 *
	(1.710)	(1.180)	(1.180)	(1.710)	(1.710)	(1.710)	(1.710)	(1.710)	(1.700)
d_b_BM (reference =2)									
Cross-border Universal (Bank Business Model)	-0.755	-0.625	-0.625	-0.754	-0.751	-0.751 **	-0.751	-0.751	-0.751
	(-1.550)	(-1.240)	(-1.240)	(-1.550)	(-1.550)	(-1.550)	(-1.550)	(-1.550)	(-1.540)
Corporate-oriented (Bank Business Model)	1.332	2.053	2.053	-0.399	1.334	1.334	1.334	1.334	1.334
	(0.810)	(1.200)	(1.200)	(-0.280)	(0.820)	(0.820)	(0.820)	(0.820)	(0.810)
Other specialised (Bank Business Model)	2.271 ***	2.113 ***	2.113 ***	2.274 ***	2.271 ***	2.271 ***	2.271 ***	2.271 ***	2.271 ***
	(3.230)	(2.600)	(2.600)	(3.230)	(3.230)	(3.230)	(3.230)	(3.230)	(3.220)
Constant	3.244	4.083	4.083	3.245	-1.071	1.389	1.389	61.948 ***	68.809 ***
	(0.860)	(0.910)	(0.910)	(0.860)	(-0.290)	(0.380)	(0.380)	(3.010)	(3.000)
Bank (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
No. Banks	94	88	88	89	94	94	94	94	94
No. Clusters	119	111	111	119	126	126	126	126	126
Observations	111,318	101,779	101,779	111,301	111,380	111,380	111,380	111,380	111,380
Log likelihood	-63,301	-57,542	-57,542	-63,297	-63,334	-63,334	-63,334	-63,334	-63,334
Adjusted R-squared	0.1495	0.1591	0.1591	0.1494	0.1495	0.1495	0.1495	0.1495	0.1495

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results - Data analysis and positive characteristics of the enforcement frameworks – Recovery rates - Regressions (examples)

	Commerical Real Estate						
VARIABLES	(1) Recovery Rate	(2) Recovery Rate	(3) Recovery Rate	(4) Recovery Rate	(5) Recovery Rate	(6) Recovery Rate	(7) Recovery Rate
D10 Absence of long moratoria that suspend enforcement of collateral	2.517 **						
	(2.400)						
D17 Electronic communication with courts and insolvency administrators (secured loas)		12.240 **					
		(2.400)					
D21 Triggers for collective insolvency proceeding			2.514 **				
			(2.400)				
D22 Debtor obliged to file for insolvency within short time limit				2.514 **			
				(2.400)			
D25 Creditors' chances to impact on the proceedings					40.8 **		
					(2.400)		
D27 Absence of privileges (prior rank) for debt towards government, etc.						12.240 **	
						(2.400)	
D37 Electronic communication with courts and insolvency administrators (Unsecured loans)							12.240 **
							(2.400)
Time to recovery (Years)	-0.149 ***	-0.150 ***	-0.15 ***	-0.150 ***	-0.150 ***	-0.150 ***	-0.150 ***
	(-5.090)	(-5.130)	(-5.13)	(-5.13)	(-5.13)	(-5.130)	(-5.130)
Efficiency Ratio 2018	0.030	0.029	0.029	0.029	0.029	0.029	0.029
	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)
avGDP_growth_13_18	-0.664 ***	3.305 **	-0.665 ***	-0.665 ***	3.305 **	3.305 **	3.305 **
	(-0.319)	(1.990)	(-0.320)	(-0.320)	(-2.020)	(-2.020)	(2.570)
d_legalorigin (reference =2)							
Germanic Law	-0.371	5.049 **	-0.376	-0.376	5.049 **	-7.190 **	5.049 **
	(-0.310)	(2.570)	(-0.32)	(-0.320)	(2.570)	(-2.020)	(2.570)
Anglo-Saxon Law	0.996	-11.229 *	3.525 **	3.525 **	-23.469 **	-23.469 **	-11.229 *
	(0.510)	(-1.830)	(1.960)	(1.960)	(-2.110)	(-2.110)	(-1.830)
Nordic Law	0.000	13.989 ***	11.94 ***	14.452 ***	13.989 ***	13.989 ***	13.989 ***
	(0.000)	(15.350)	(10.19)	(15.150)	(15.350)	(15.350)	(15.350)
d_bsize_categ2 (reference =2)							
Small Bank	-1.291	-0.289	-0.289	-0.289	-0.289	-0.289	-0.289
	(-1.270)	(-0.270)	(-0.27)	(-0.270)	(-0.270)	(-0.270)	(-0.270)
Large Bank	0.929	0.922	0.922	0.922	0.922	0.922	0.922
	(0.940)	(0.950)	(0.950)	(0.950)	(0.950)	(0.950)	(0.950)
d_b_BM (reference =2)							
Cross-border Universal (Bank Business model)	-1.516	-1.512	-1.512	-1.512	-1.512	-1.512	-1.512
	(-1.240)	(-1.250)	(-1.250)	(-1.250)	(-1.250)	(-1.250)	(-1.250)
Corporate-oriented (Bank Business Model)		-11.852 ***	-11.852 ***	-11.852 ***	-11.852 ***	-11.852 ***	-11.852 ***
		(-8.240)	(-8.240)	(-8.240)	(-8.240)	(-8.240)	(-8.240)
Constant	1.089	-16.545 **	1.120	1.120	-45.10 **	-4.305	-16.545 **
	(0.520)	(-2.030)	(0.540)	(0.540)	(-2.270)	(-1.250)	(-2.030)
Bank (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y
Country (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y
Country fixed effects (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y
No. Banks	58	63	63	63	63	63	63
No. Clusters	62	67	67	67	67	67	67
Observations	14,927	15, 252	15,252	15,252	15,252	15,252	15,252
Log likelihood	-7,497	-7,536	-7,536	-7,536	-7,536	-7,536	-7,536
Adjusted R-squared	0.085	0.091	0.091	0.091	0.091	0.091	0.091

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results - Data analysis and positive characteristics of the enforcement frameworks – Time to Recovery - Regressions (examples)

VARIABLES	FIRMS (1) Time to Recovery	FIRMS (2) Time to Recovery	FIRMS (3) Time to Recovery	FIRMS (4) Time to Recovery	FIRMS (5) Time to Recovery	FIRMS (6) Time to Recovery	FIRMS (7) Time to Recovery
D1 Out-of-court enforcement of collateral	1.310 **						
	(2.010)						
D2 Out-of-court enforcement of collateral, for real estate collateral		1.304 **					
		(1.980)					
D3 Out-of-court enforcement of collateral, for tangible moveable assets			1.304 **				
			(1.980)				
D10 Absence of long moratoria that suspend enforcement of collateral				1.310 **			
				(2.010)			
D25 Creditors' chances to impact on the proceedings through creditor committees					2.457 **		
					(2.010)		
D27 Absence of privileges (prior rank) for debt towards government, social security						1.310 **	
						(2.010)	
D28 Absence of privileges (prior rank) for wages, pension schemes							1.310 **
							(2.010)
Bank (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y
Country (clustered standard errors)	Y	Y	Y	Y	Y	Y	Y
Country fixed effects	Y	Y	Y	Y	Y	Y	Y
No. Banks	113	105	105	109	114	114	114
No. Clusters	144	134	134	144	152	152	152
Observations	130,208	118,827	118,827	129,954	130,279	130,279	130,279
Log likelihood	-1,388,022	-1,254,410	-1,254,410	-1,385,031	-1,388,840	-1,388,840	-1,388,840
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Robust t-statistics in parentheses

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

Data analysis and positive characteristics of the enforcement frameworks

Summary of the positive characteristics of the enforcement frameworks per asset class

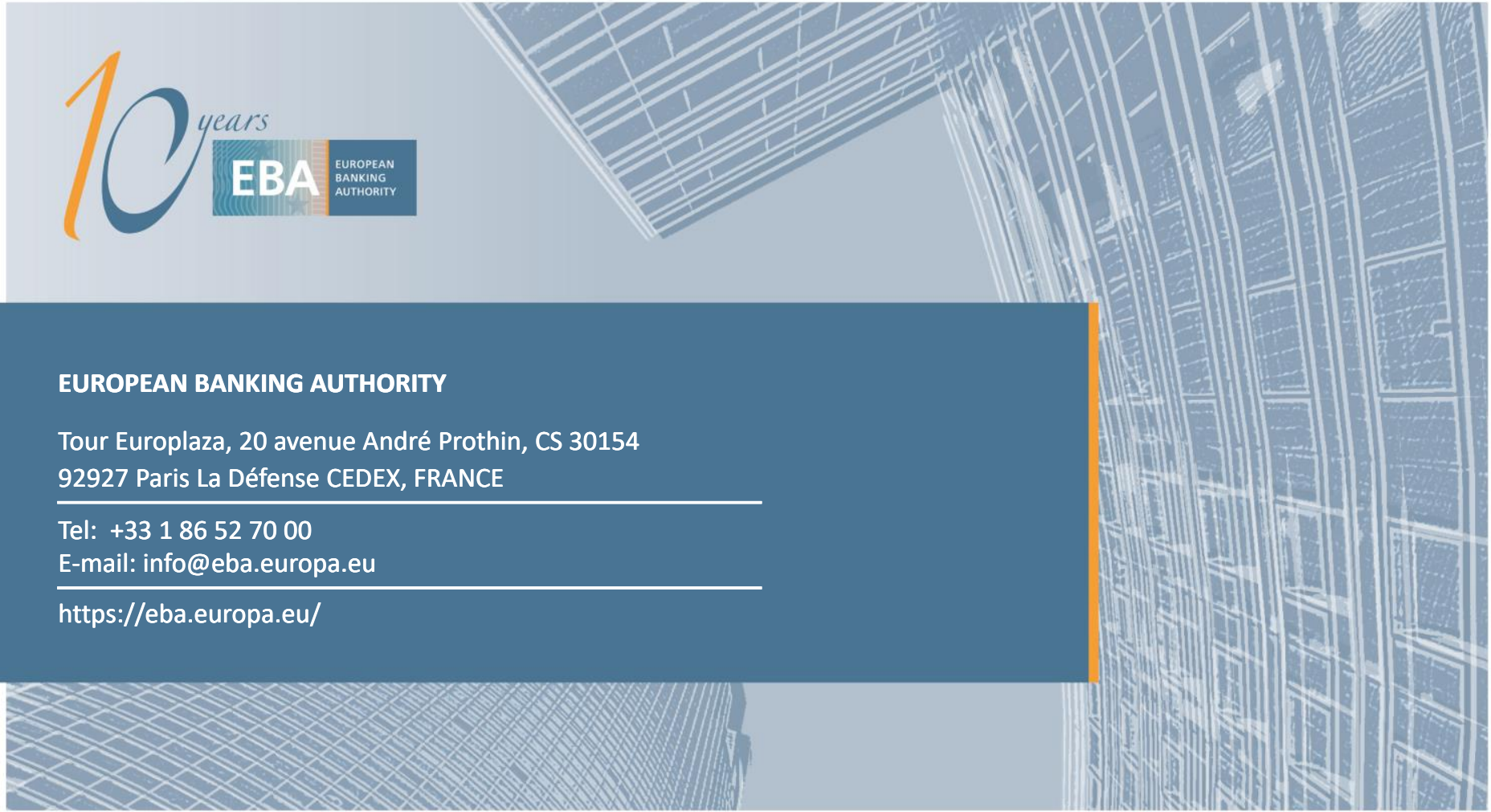
FIRMS (Corporate and SMEs)	Commercial Real Estate	Residential Real Estate	Credit Cards	Other Consumer Loans
Legal instruments to enable out-of-court enforcement of collateral posted; the absence of long moratoria that suspend enforcement of collateral; the possibility for creditors to influence the proceedings through creditor committees; absence of privileges (prior rank) for debt towards specific types of creditors/debt (such as government, social security, wages, pension schemes); and the existence of 'pre-pack' insolvency (or restructuring) regimes available for SMEs.	Absence of long moratoria that suspend enforcement of collateral; electronic communication between the courts and the insolvency administrators (secured and unsecured loans); triggers for collective insolvency proceeding taking into consideration debtor's future positive/negative cash flow; debtor obliged to file for insolvency within short time frame; creditors' chances to impact on the proceedings through creditor committees; and the absence of privileges (prior rank) for debt towards government and social security.	Courts/judges who are specialised in insolvency cases (secured and unsecured); and triggers for collective insolvency proceeding which take into consideration debtor's future positive/negative cash flow.	Triggers for collective insolvency proceeding taking into consideration debtor's future positive/negative cash flow; electronic communication with courts and insolvency (secured loans); availability of avoidance actions and creditors entitled to request insolvency proceedings to be commenced.	Out-of-court foreclosure proceedings such as asset seizure without preceding court order/judgement; legal techniques to enable out-of-court enforcement of collateral available; time limit for filing of claims; triggers for collective insolvency proceeding taking into consideration debtor's future positive/negative cash flow; debtor obliged to file for insolvency within short time limit; and courts specialised in insolvency cases.

Results - Data analysis and positive characteristics of the enforcement frameworks

Positive characteristics of the enforcement frameworks that are **common to three or more asset classes**

- Legal instruments to enable out-of-court enforcement of collateral collateral available;
- Absence of long moratoria that suspend enforcement of collateral;
- Possibility for creditors to influence the proceedings through creditor committees;
- Absence of privileges (prior rank) for debt towards specific types of creditors/debt (such as government, social security, wages, pension schemes);
- Triggers for collective insolvency proceeding taking into consideration debtor's future positive/negative cash flow.

On the basis of this analysis, it seems these could be useful reforms to think about



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