



EUROPEAN CENTRAL BANK

EUROSYSTEM

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AnaCredit: From broad to flexible macroprudential analysis

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Disclaimer: The views expressed are those of the authors and do not necessarily reflect those of the ECB.

- 1 Granular data for macroprudential supervision
- 2 AnaCredit data model: representing reality
- 3 AnaCredit content: scope, detail, networks, distribution
- 4 Case study: real estate data gaps
- 5 Exploring indicators from the top down
- 6 Future extensions

Past

Broad approach

- Aggregate indicators
- Constrained by *static definitions* and *complex relationships* between agents

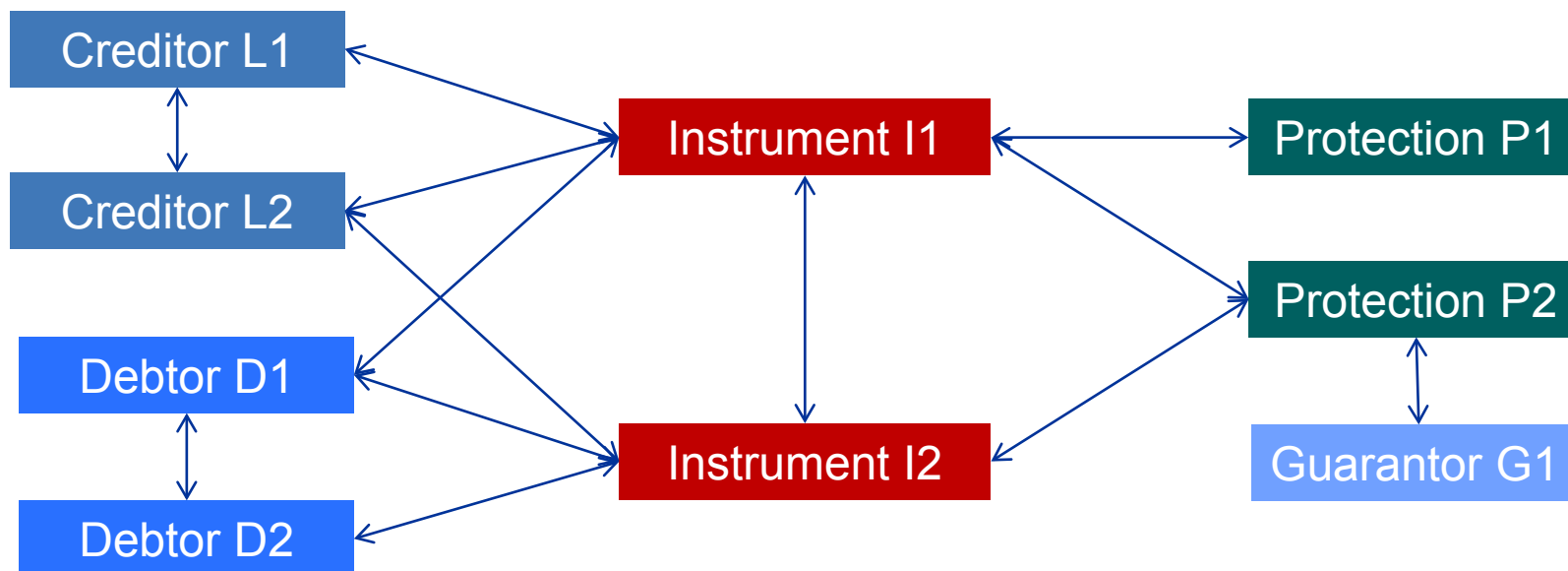
Future

Top-down and bottom-up approaches with three advantages:

1. **Detail:** flexible definition of *indicators* (with back-casting) and calibration and *estimation of models*
2. **Networks:** *concentration of risk* and *contagion effects*
3. **Distributions:** rich analysis of the complete population with simulations

Financial intermediation is complex

- **Instruments** Multipurpose contracts
- **Counterparties** Creditor, debtor, protection provider, etc.
- **Protection** Collaterals and guarantees
- **Relationships** Banking groups / corporate groups
Syndicated loans / joint debtors
Umbrella contracts
n-to-m instrument-collateral relationships



AnaCredit Regulation (EU) 2016/867 adopted **18 May 2016**

AnaCredit go-live: **September 2018**

- Reporting population: **credit institutions**
 - Resident in the euro area
 - Includes all foreign branches

- Counterparties:
 - Creditors: **credit institutions** & other sectors (for loans serviced by CI)
 - Debtors: legal entities (including **Government**)


- Instruments (assets): **loans** (including **inter MFI positions**)
 - Serviced or held


- Threshold (creditor-debtor): **EUR 25,000**


88 attributes to assess credit intermediation

- Counterparties:  *Who is who?*

 - Identification of creditors and debtors
 - Characterisation: e.g. size, sector of economic activity
- Balance sheet status  *What?*

 - Classify exposures by type (e.g. type of product) and use (e.g. securitisation)
 - Needed for internal consistency: avoid double counting (e.g. joint liabilities)
- Exposure features  *What (in greater detail)?*

 - Classify the exposures for analytical purposes (e.g. maturity, interest rate)
- Risk measure  *Will it happen?*

 - Provide a forward-looking view (e.g. probability of default)
- Loss measure  *What would happen?*

 - Provide a backward-looking view (e.g. accumulated impairments)
- Valuation  *How much?*

 - Book values, nominal values, market values

➤ Four indicative use cases

+ Examples for AnaCredit attributes that may be relevant

Concentration of risk

- Head office/immediate/ultimate parent identifiers
- Address: country
- Economic activity
- Outstanding nominal amount

Level of exposure

- Enterprise size
- Outstanding nominal amount
- Off-balance sheet amount
- Probability of default

Contagion

- Outstanding nominal amount
- Type of securitisation
- Type of protection
- Protection value

Losses

- Legal final maturity date
- Settlement date
- Arrears for the instrument
- Accumulated impairment amount

- Banking groups
 - Pseudo-consolidation
 - Different levels of banking groups (e.g. national level, EU level)
 - Syndicated loans
- Corporate groups
- Location
- Sectors of activity
 - Institutional sector
 - NACE level 3
- Contagion
 - Inter MFI positions
 - Unique identification of counterparties
 - Banks with similar business models
- Extensibility via **RIAD***

* RIAD: Register of Institutions and Affiliates Database

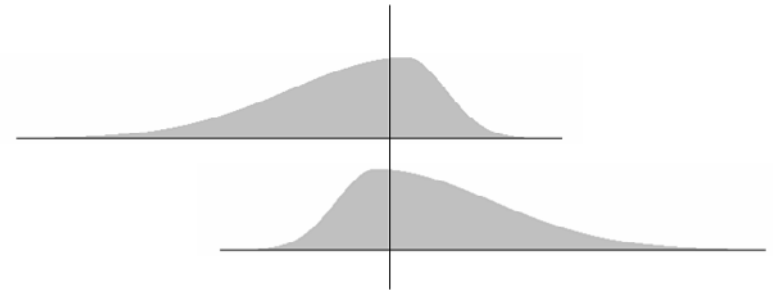
- Individual information
 - Near complete population
- ➔ Building the full distribution for all entities

- Describing the complete population
 - Average (traditional)
 - Additional descriptive statistics for the population

- + Central tendency
- + Dispersion
- + Concentrations

➔ e.g. focus on the tail
(entities that accumulate risk)

- Combining indicators
 - Loan-to-value - NPL ratio - bank size
 - Correlations



- Based on ESRB Recommendation (ESRB/2016/14)
- Two main loan portfolios: CRE* and RRE** loans
 - Different definitions of CRE and RRE
 - Combination of granular data allows for multiple definitions
 - Large reconciliation possible with current information
- Coverage:
 - CRE loans are captured (missing loans to natural persons for RRE)
 - Large coverage of main variables required to calculate the indicators
 - Many of the proposed breakdowns
 - All required distributions, indicator metrics and data types (flow/stock)
- AnaCredit allows analysing in detail the portfolio of CRE loans
 - Large set of indicators
 - Correlation with other indicators
 - Ex-post definition of indicators – not constrained to a fixed template

* CRE: Commercial real estate

** RRE: Residential real estate

ESRB indicator concepts	AnaCredit mapping
Lending – current	Outstanding nominal amount
Lending – at origination	Commitment amount at inception, off-balance sheet amount (requires estimate for credit lines)
Property value – current	Protection value, type of collateral
Property value – at origination	Original protection value, type of collateral
Maturity – at origination	Settlement date, legal final maturity date
Investment in CRE	Out of scope
Non-performing loans	Performing status of the instrument
Loan-loss provisions	Accumulated impairment

ESRB break downs	AnaCredit mapping
Property type	Type of protection (less detail in AnaCredit)
Property location	Real estate collateral location (Analyst must identify prime locations)
Lender type	Economic activity
Lender nationality	Address: country
Investor type	Economic activity
Lender nationality	Address: country
Property under development	Purpose with the value Construction investment

- Loan-to-value
- Different definitions can be specified
 - What is a **loan**? (outstanding amount, carrying amount?)
 - What is **value**? (protection value, amount of protection that secures the loan?)
 - + By type of protection: Financial / real estate / other
 - What **time**? (current, origination?)
- Defined at loan level –
Focus of analysis can be defined ex-post based on available details:
 - Groups of entities
 - Location (creditor, debtor, real estate)
 - Performance
- Distribution
 - Focus on the least secured (highest loan-to-value) entities/portfolios
 - + Tail of the distribution
 - Joint distribution
 - + Correlation with other relevant indicators, e.g. non-performing loans

- Combine with information from other datasets
 - Granular data (SHSDB, CSDB)
 - Individual basis (e.g. iBSI, FINREP, COREP)

- Complete balance sheet*
 - Comprehensive view of risks taken by the bank
 - + Off-balance sheet items, e.g. loan commitments, guarantees provided
 - + Derivatives
 - Sources of finance and leverage

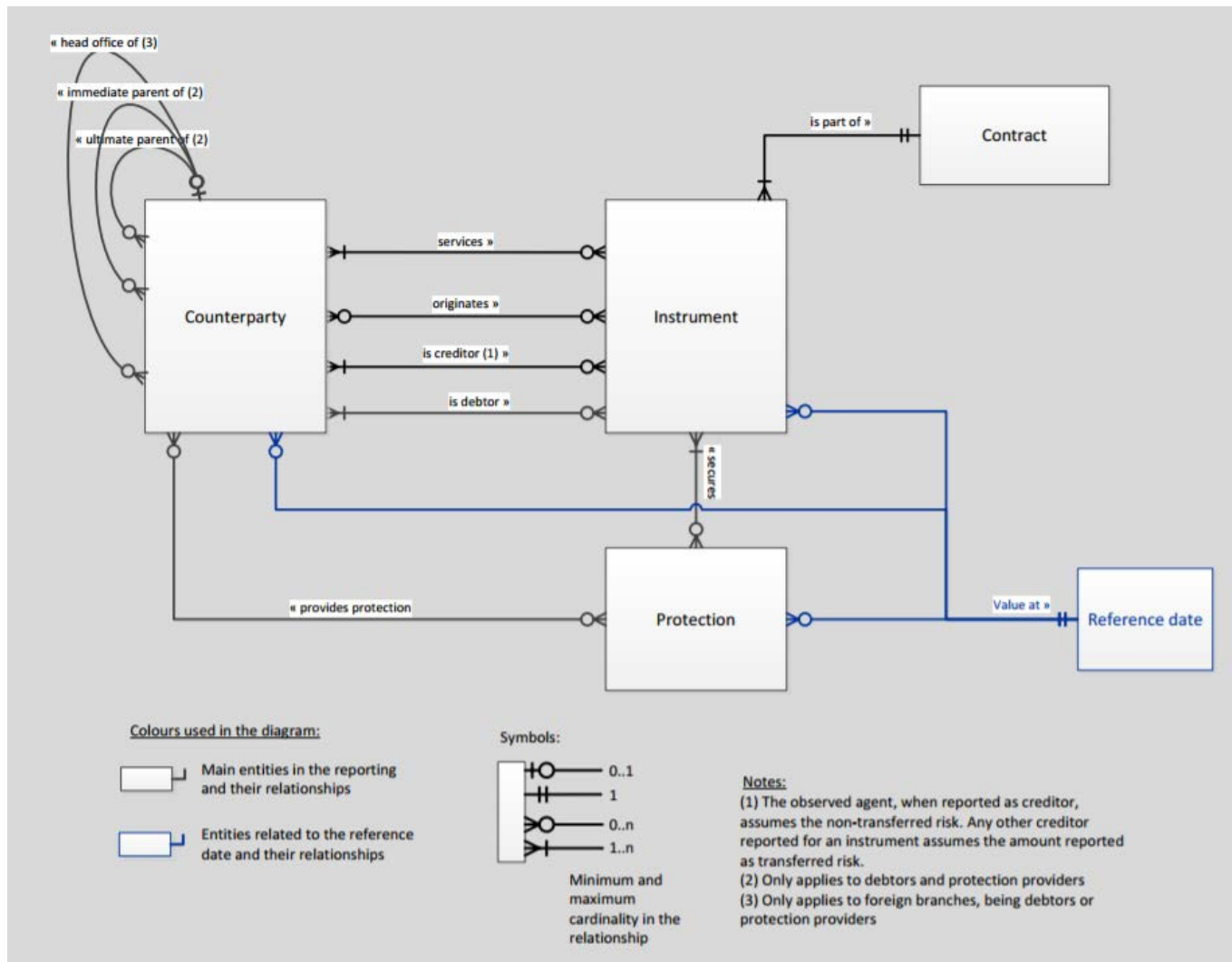
- Enlarge the scope*
 - Shadow banking
 - Other relevant counterparties, e.g. natural persons

* Not planned, based on user needs

- **Granular data** captures the behaviour of economic agents closer to reality
- **Macroprudential analysis** can benefit in particular from
 - The higher level of *detail*
 - The ability to trace and construct *networks of counterparties*
 - The possibility to analyse full *distributions* of indicators
- Granular data alleviates discrepancy between different **definitions**
- Many economic & financial **indicators** can be constructed with AnaCredit
 - **Drill-downs and distributions** provide important *insights for analysis* where averages are insufficient and dispersion measures are needed

Annexes

Conceptual model



- 6 entity tables with one or more datasets each

Instrument entity table

instrument data, financial data,
accounting data

Protection entity table

protection received data

Instrument-protection received entity table

instrument-protection received data

Counterparty reference data entity table

counterparty reference data

Counterparty risk/default entity table

counterparty risk data, counterparty
default data

Counterparty-instrument entity table

counterparty-instrument data,
joint liabilities data

