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Interconnecting multiple granular datasets to evaluate credit risks

The ESCB experience

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1 Introduction

In the aftermath of the financial crisis, central bank policy makers have expressed a need for more granular credit data for monetary policy and macro/micro-prudential supervision. In response to this policy need, the ECB and the euro area National Central Banks (NCBs) are setting up the Analytical Credit Datasets (AnaCredit) with detailed and timely information on bank loans in the euro area (and some other EU) countries. AnaCredit complements the Centralised Securities Database (CSDB) and the Securities Holdings Statistics Database (SHSDB), instrument-by-instrument datasets created to support the ECB's decision making processes.

The policy makers need analyses of the total exposure of creditors (lenders/holders) to debtors (borrowers/issuers) as well as the total borrowings of debtors at the entity level and also at different levels of consolidation. Such analyses require the linking of above-mentioned databases. Successfully linking them requires *inter alia* a unique link between instruments and counterparties through a stable entity identifier. The European System of Central Banks' (ESCB) Register of Institutions and Affiliates Data (RIAD) *inter alia* stores information on entity identifiers and is thus pivotal in ensuring the unique identification of counterparties. Moreover, it offers a representation of group structures according to different levels of consolidation.

This paper illustrates which types of credit risk analyses can be performed exploiting the interconnectedness of the ESCB's granular datasets, mainly focusing on the identification of risks arising from the concentration of counterparties in the same conglomerate, and on the possible identification of 'Wrong Way risk'.

The paper is structured as follows: Section 2 of this paper explains in more detail why the ESCB policy makers need more granular data. Section 3 describes RIAD and its crucial role in linking the granular statistical databases described in Section 4.

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Section 5 then describes which types of credit risk analysis can be performed using these linked databases. Section 6 concludes and gives an outlook on future challenges.

2 Why granular data?

The advantages of collecting and maintaining granular credit data are multiple, all of them are intrinsically contained in the word 'granular'. Individual, detailed or single information has, first of all, the advantage of being collected in a more timely fashion, due to the fact that no pre-aggregation is necessary (so less transformation is needed by the reporting banks). Moreover, granular data give freedom to users to 'play' with the information, in other words, granular data can be aggregated in different ways according to different scopes, also across time (backwards), exponentially increasing the number of analyses that can be performed.

Traditionally, central bank policy makers have focused on aggregated, macro-economic statistics in their analyses. An example is the ECB Convergence Report[2] in which aggregated, macro-economic statistics are used to assess the state of economic convergence in EU Member States seeking to adopt the euro. One such statistic is the government debt-to-GDP ratio of the countries under scrutiny. Both government debt and the GDP are compiled according to internationally harmonised definitions[3] and are part of an integrated set of interdependent macro-economic statistics known as the national accounts. The debt-to-GDP ratios of EU Member States are checked and validated by Eurostat. Still, this indicator only becomes available almost four months after the end of each year/quarter. However, in times of market turmoil, policy makers need information that is more timely and more detailed than the debt-to-GDP ratio: for example it is interesting to know which part of the total amount of outstanding government debt securities has to be refinanced in the next three months. With the granular data available in the ESCB's Centralised Securities Database (CSDB), it is possible to extract granular information with which to compute this amount (and other possible breakdowns) quickly after the end of each month. Due to the granularity of the data it is moreover possible to compute different types of aggregates that are of use to policy makers, such as short-term versus long-term issuances and nominal yields.[4]

The use of the CSDB for more information on government debt securities is just one example of how granular data can be used to provide more timely and detailed information to policy makers to complement macro-statistics. In general, it is of utmost importance for monetary policy makers and supervisors to have access to a wide and detailed set of credit and credit risk data in order to close the gap between micro and macro analysis. It became evident that not only micro-prudential analysts

2 Available at: https://www.ecb.europa.eu/pub/convergence/html/index.en.html

3 Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013 and Council Regulation (EC) No 479/2009.

4 For more details see the ECB Statistics Paper "New and timely statistical indicators on government debt securities" by Asier Cornejo Pérez, Jorge Diz Dias and Dagmar Hartwig Lojsch.

but also macro-prudential analysts need granular micro data, as identified by the ESCB Task Force on Analytical Credit Datasets[5]. Both micro/macro prudential supervisors and policy makers analysts will benefit from the interconnection of micro/macro data, getting bilateral insights in order to detect emerging systemic risks and vulnerabilities[6].

3 The pivotal role of RIAD

The ECB Governing Council, advised by the ESCB's Statistics Committee, decided in June 2016 to have a unique repository for all the reference data. For this reason it agreed to extend RIAD – which pre-existed and entailed data on entities in the financial sector – as a shared platform for the collection, (joint) management and provision of counterparty reference data needed for all ESCB granular datasets, including non-financial corporations. It is constructed as a shared dataset in which NCBs or National Competent (Supervisory) Authorities (NCAs) are responsible for data on entities resident in their own jurisdiction, but may also provide information on non-resident entities.

RIAD will be pivotal in ensuring that different granular databases can be linked since it ensures the unique identification of counterparties. At least one common identifier available in RIAD should be reported to the other systems to allow them to be linked. This identifier should be unique and stable over time.[7]

RIAD contains reference data on legal and other institutional units relevant for statistical and several other business processes in the ESCB and SSM. The reference data in RIAD serve four purposes[8]:

- **Identification**

RIAD ensures the unique identification of counterparties via a large number of identifiers, including the 'Legal Entity Identifier' (LEI), but also specific national identifiers (e.g. tax code, business register number). In addition, it contains information on entities' official name and address. As said before, the unique identification of entities is crucial in the linking of different databases.

- **Stratification**

RIAD holds information on the industrial activity classification (NACE), statistical sector classification (ESA 2010) and geographical location (NUTS) of entities. This information allows to breakdown the population in different layers and to run multiple

5 Damia, V., & Israël, J. M. (2014). Standardised granular credit and credit risk data. In Seventh IFC Conference on Indicators to support Monetary and Financial Stability Analysis: Data Sources and Statistical Methodologies.

6 Heath, M. R. M., & Goksu, E. B. (2017). Financial Stability Analysis: What are the Data Needs?. International Monetary Fund.

7 In line with the Guideline (EU) 2018/876 of the ECB of 1 June 2018 on RIAD (ECB/2018/16).

8 In line with the UNECE Guidelines on Statistical Business Registers: https://www.unece.org/index.php?id=40574

analyses based on different purposes. The statistical sector classification is for example of relevance for the different lists of financial entities that the ECB publishes[9]. For credit risk analysis these breakdowns can be used to assess exposures of/vis-à-vis certain sectors/industries.

- **Demographic developments**

The initial date of entity's registration in the national business register (i.e. 'birth date') is collected in RIAD, as well as the official de-registration date (i.e. 'closure date'). Information on the business status, (e.g. active, inactive) or whether the entity is 'under liquidation' are also collected. Moreover, NCBs report information on relevant corporate events such as splits, mergers or change of residency. A user can thus trace an issuer of securities or a securities holder across time and corporate events, which may be relevant when assessing credit risks.

- **Relationships between entities**

There can be different types of relationships between two entities: control, ownership, management, supervision, origination, branch etc. Relationships are necessary to derive group structures in RIAD as illustrated in *Box 1*.

Box 1 – Group structures in RIAD

The group structures in RIAD are derived from the bilateral relationships between entities in RIAD and are not separately reported. This approach provides flexibility to users who are interested in multiple analyses, looking at different interlinkages among institutions. Group structures can be defined on the basis of control, ownership or other links (e.g. links among supervised entities).

The group structures based on **'control'**[10] are calculated as follows in RIAD: first the 'head' of the group is identified, then the entities it controls. There are three conditions that determine whether an entity is a controlling parent:

(i) **Explicit direct control** over the subsidiary; and/or

(ii) **Ownership of more than 50%** of the subsidiary's capital; or

(iii) **Indirect control** over the subsidiary, through two or more controlled subsidiaries[11]

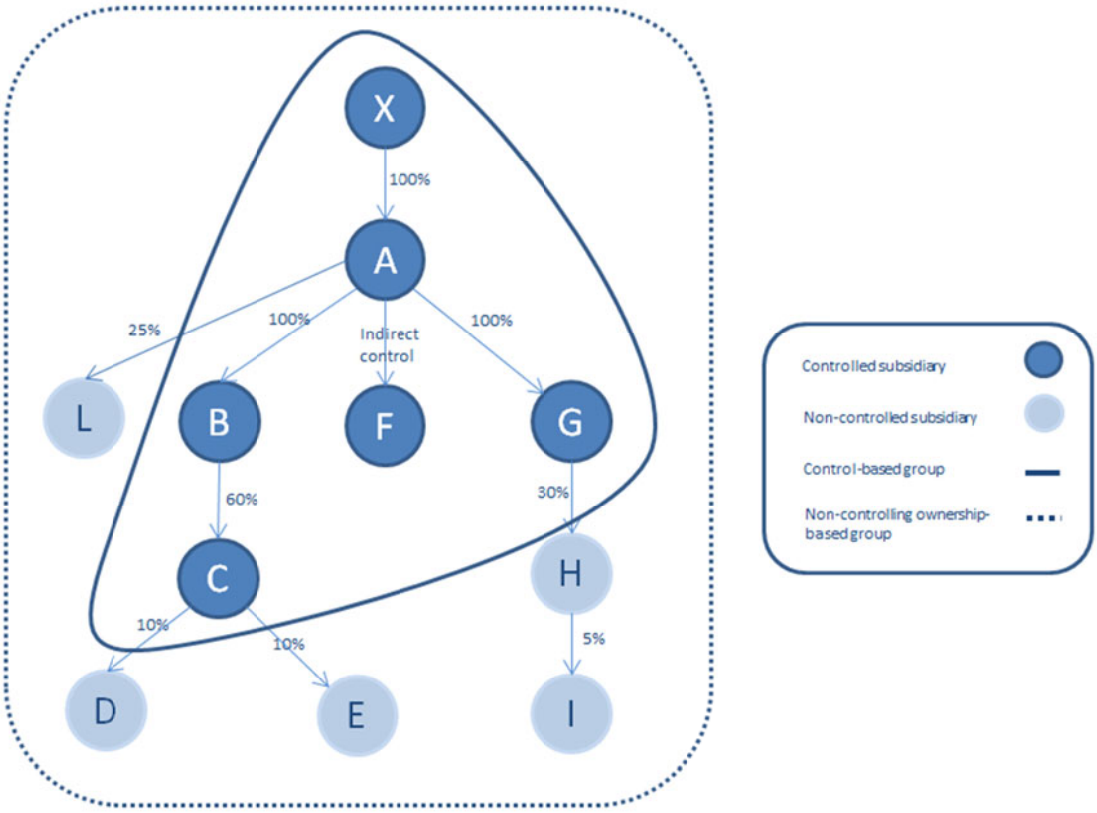
The identified group reflects the accounting scope of consolidation as identified by IFRS10.

This group can then be enriched with information encompassing all equity investments of the group members, i.e. a group based on all non-controlling ownership relationships as shown in the chart below. Such an enriched group structure is of interest to for example ESCB policy makers working in market operations, risk management and macro-prudential supervision.

9 http://www.ecb.europa.eu/stats/financial_corporations/list_of_financial_institutions/html/index.en.html

10 As defined in Directive 83/349/EEC.

11 Indirect control is for instance identified when entity A and entity B own respectively 30% of entity C (owning in total 60% of the shares of C) and an entity X controls both entity A and entity B. In this situation, it is possible to say that entity X indirectly controls entity C through its subsidiaries A and B.



These are just two of the possible group structures that can be calculated using RIAD. RIAD will soon also contain group structures based on links between supervised entities (as defined in the Capital Requirements Regulation (CRR)[12]). The links (or absence thereof) between supervised entities determines the reporting requirements both of the ultimate supervised head of a group but also of its supervised subsidiaries, liquidity sub-groups and of stand-alone entities. Not all entities that are part of the group that is constructed using the control definition according to the financial accounting perimeter are supervised entities within the prudential consolidation perimeter. For example, an insurance undertaking, an industrial company or insurance led mixed financial holding that controls a lower-level credit institution will not be considered ultimate supervised head of the group. Due to RIAD's flexibility it will however be possible to compute groups both according to the financial accounting and the prudential consolidation perimeter and to compare overlaps and differences between the two types of group structures.

4 Granular statistical databases within the ESCB

There are several granular statistical databases within the ESCB that contain information on different types of credit: the CSDB, the SHSDB and AnaCredit datasets. The purposes of these databases are described in the sections below.

[12] Regulation (EU) No 575/213 on prudential requirements for credit institutions and investment firms.

4.1 The Centralised Securities Database[13]

The financial crisis increased the relevance of granular security-by-security data as a means of ensuring better microeconomic analysis of financial markets and credit risks. The granular security-by-security data in the CSDB provide complete, accurate, consistent and up-to-date information to a wide range of users within the ESCB[14] on individual securities:

- *issued by EU residents*
- *securities likely to be held and transacted in by EU residents; and*
- *securities denominated in euro, regardless of the residency of the issuers and holders.*

The CSDB currently contains information on over seven million non-matured or "alive" debt securities, equities and mutual fund shares/units plus approximately nine million matured or "non-alive" securities. It contains reference data on securities (e.g. outstanding amounts, issue and maturity dates, coupon and dividend information, statistical classifications, etc.), issuers and prices (market, estimated or defaulted) as well as more recently introduced information on ratings (of the security, issuer, guarantor or issuance programmes).

4.2 The Securities Holdings Statistics Database[15]

During the financial crisis policy makers became aware that they did not have enough information on which securities holders would be impacted, if the issuer of these securities were to go bankrupt. In response, the ESCB decided to collect information on securities holdings.

The information on holdings can be divided in two categories:

- *securities held by institutional sectors*[16], which includes:
    - holdings of the institutional sectors in the euro area countries (e.g. households, non-financial corporations etc.);
    - holdings of non-euro area investors deposited with a euro area custodian;
    - holdings of non-euro area EU investors collected by non-euro area EU countries.

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13 Source: "New and timely statistical indicators on government debt securities" by Asier Cornejo Pérez, Jorge Diz Dias and Dagmar Hartwig Lojsch.

14 A number of statistical indicators on government debt securities derived from the CSDB are available to the general public on the ECB website: http://sdw.ecb.europa.eu/reports.do?node=1000003848

15 For more information see the dedicated page on securities holdings on the ECB website.

16 The ECB publishes holdings by euro area sectors in its Statistical Data Warehouse: http://sdw.ecb.europa.eu/browse.do?node=9691130

- *securities held by banking groups:* from September 2018 the holdings of all banking groups that are directly supervised by the ECB (the so-called significant institutions) will need to be reported.

4.3 AnaCredit[17]

AnaCredit will serve several central banking functions, including monetary policy and macro-prudential supervision in identifying credit risk and in performing credit risk analysis across euro area countries. Aggregated data along different dimensions will be widely available and most of them will be published; more disaggregated data will also be shared, on a strict need-to-know basis, with authorised users across the ESCB and other relevant institutions, e.g. national supervisory authorities associated in the Single Supervisory Mechanism (SSM), the European Banking Authority and the European Commission. This will help in raising European-wide information knowledge on credit and credit risk with the benefit of positive feedback loops among all the involved institutions. Moreover, bearing in mind that the largest exposure of banks' credit is to the non-financial sector[18], AnaCredit will help also in assessing the sustainability and vulnerability of the non-financial corporations' debt positions and in identifying potential early indicators of crises. AnaCredit will moreover provide detailed data on the availability of credit to SMEs, for which currently only information based on surveys is available. Overall, it will be one of the key drivers for monitoring the soundness and efficiency of the financial system, keeping the focus on credit and debt sustainability of the non-financial sector.

AnaCredit includes detailed information on credit and credit risk on an instrument-by-instrument[19] basis. AnaCredit covers credit granted by euro area credit institutions (including their branches outside the euro area) and credit granted by the euro area branches of non-euro area credit institutions to corporations and other legal entities.

The information collected comprises *inter alia* the type of credit extended, outstanding amounts, original and residual maturity, the interest rate and the currency of the instrument. In addition, information on any credit protection (i.e. guarantees and collateral) is also collected. Moreover, with a view to enabling the reliable identification of all debtors, the collection includes reference data for every counterparty related directly or indirectly to the instruments via RIAD.

Data are submitted to the ECB every month and quarter (for monthly and quarterly reporting, respectively) pursuant to the reporting deadlines. The first AnaCredit reporting concerns data relating to September 2018.

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17 For more information, see the explanatory note on the AnaCredit Regulation on the ECB website.

18 European Central Bank (2017), Report on financial structures.

19 The following instruments are covered by AnaCredit: deposits other than reverse repurchase agreements; overdrafts; credit card debt; revolving credit other than overdrafts and credit card debt; credit lines other than revolving credit; reverse repurchase agreements; trade receivables; financial leases; and other loans.

4.4 Linking the granular databases

Once AnaCredit, CSDB, SHSDB can be linked via RIAD it will be possible to compute the total exposure of creditors (lenders/holders) to debtors (borrowers/issuers) as well as the total borrowings of debtors at the entity level. Moreover, this granular information can be used to compute exposures at a more aggregated level (e.g. groups, sectors, geographical areas). These linked databases will support the monetary analysis and policy decision-making, the early detection of systemic risks and the conduct of macro-prudential policies and micro-prudential supervision.

As said in Section 3, at least one common identifier available in RIAD should be reported to the other systems to allow them to be linked. This identifier should be unique and stable over time. The idea of a common, unique and stable identifier sounds very simple, but the actual implementation requires the coordination of experts in different teams in the NCBs and the ECB. They will have to ensure that the instruments in the CSDB, the SHSDB and AnaCredit are uniquely linked to the corresponding counterparties. They will also have to ensure that RIAD contains all the counterparties relevant for the CSDB, SHSDB and AnaCredit. Moreover, it has been agreed between the ECB and the experts from the NCBs which entity identifier is to be used for each country to link all the instruments for all sectors in the databases.

The integration of multiple ESCB granular datasets (containing credit information), linked by a unique master data register will help supervisors and other policy makers in conducting financial stability surveillance and macro-prudential analyses as well as quantitative risk assessment. The enriched information coming from the interconnected datasets will support stress-tests conducted at counterparty level but also at macro level in order to forecast overall system's vulnerability. A crucial outcome, significant especially for micro-prudential supervision, will be the assessment of creditworthiness of borrowers (e.g. 'credit history'); moreover, supervisors will have the possibility to assess the liquidity and solvency of supervised entities both at the individual entity and consolidated group level. This will enable a multitude of alternative uses in the supervisory process (off- and on-site) and permit analysis options otherwise not covered so far by any regular reporting as well as complementing other reporting systems' information[5].

5 Credit Risk analysis

Different kinds of credit risk can be identified in the financial literature[20], however, it is generally defined as "the potential risk that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms"[21]. Commercial banks are the

[20] Altman, E. I., & Saunders, A. (1997). Credit risk measurement: Developments over the last 20 years. Journal of banking & finance, 21(11-12), 1721-1742.

[21] Basel Committee. (1999). Principles for the management of credit risk. Basel Committee on Banking Supervision.

actors which mostly bear this risk, considering that loans are historically the largest source of credit in Europe[18]. However, other forms of credit risk (or counterparty risk) arise through other banking activities (for instance, in debt-securities transactions, collateralised repos and derivatives contracts), and all actors in the financial market can be affected.

History showed that large amounts of money lent to agents, especially those with low creditworthiness, hence not taking seriously credit risk into account, could lead to dramatic financial instability, with serious consequences also to the real economy. For this reason, credit risk continues to be in need of the magnifying glass of supervisors, monetary policy makers and financial regulators.

In the next sub-sections, we will outline different ways in which the integrated information stored in the ESCB datasets can be exploited in order to perform credit risk analyses.

5.1 Non-performing loans

Through the Banking Union, an important objective was to better assess credit risks focusing especially on the topic of the non-performing loans (NPLs). Regarding the latter, the ECB issued first a qualitative guidance on how banks should manage NPLs, addressing their governance and requiring banks to draft strategic plans to reduce them; and then issuing an addendum to this guidance in 2018 indicating supervisory expectations with regard to prudent provisioning for new NPLs[22].

Nevertheless, according to the SSM supervisory priorities of 2018, one of the key drivers of banking sector risks is still identified in large stocks of NPLs[23]. Data reported in AnaCredit may over time help to support the SSM in addressing this challenge. Default probabilities, other information on the default status of the counterparty and on the default status of the single instrument, are collected in AnaCredit and can be used to scrutiny the timeliness of NPL provisioning and write-offs. Early indicators obtained from data maintained in a coherent and accurate manner can be helpful for assessing the validity of NPL strategies designed by banks in a timely manner. These analyses could be performed also taking in consideration potential interlinks among counterparties, trying to forecast a possible *contagion effect,* also known as *domino effect*[24]*.* Banks' credit exposures to correlated counterparties are potentially more risky because of the just mentioned domino effect. For instance, a bank provides loans to two entities linked by a control relationship, the controlling entity may experience financial problems that could be potentially transferred to the controlled entity, with the result that both entities would experience a financial problem and consequently the financing bank would suffer. An improved estimation of such correlations is crucial for the realisation of a thorough

[22] Speech by Ignazio Angeloni, Member of the Supervisory Board of the ECB, at the ECB Central Banking Seminar, 10 July 2018.

[23] European Central Bank (2018), ECB Banking Supervision: SSM supervisory priorities 2018.

[24] European Banking Authority (2017), Final Report, Guidelines on connected clients.

and reliable credit portfolio analysis. Since RIAD has been set up for the purpose of the unique identification of entities and the relationships between them, it will be pivotal in identifying such correlations. Also in this direction the new developments[25] on group structures to be reported in RIAD will definitely provide an added value in identifying interlinkages between different counterparties.

5.2 Concentration risk

The integration of granular datasets will better address also a number of monetary policy analysis relevant matters; one for instance is the assessment of *Concentration risk* in its different forms. The simplest form of concentration risk is identified as '*single-name' concentration risk* and arises in absence of a correct idiosyncratic risk diversification. In other words, a bank faces this risk when exposures to a single counterparty accounts for more than an infinitesimal share of the total portfolio[26], meaning that there is still room for diversification and consequent risks reduction. Another form of concentration risk is identified when investments are focused in asset classes with common features, the so-called *sectoral concentration risk*. This kind of risk arises from the fact that business conditions and consequently default probabilities are not fully aligned across the whole economy[26](e.g. the EU), indeed there may be areas, meant both as business areas or geographical areas, where risks are generally higher.

The correct identification of concentration risk in banks' credit portfolios is crucial in assessing potential gaps between the capital requirements imposed and the ones necessary to cover the 'real' risk sustained. In this context, the supervisors are the main beneficiaries of the interconnectedness of granular statistical datasets; RIAD, ensuring the unique identification of counterparties, allows an easy visualisation of the so-called single-name concentration risk. Indeed, for each loan recorded in AnaCredit it is possible to identify the lender and the borrower thanks to the reference data in RIAD. As well for all the securities recorded in the CSDB and SHSDB it is possible to identify the issuer and the holder respectively. On the other hand, RIAD offers the possibility to perform multiple sectoral concentration analyses through different counterparty breakdowns. For instance, a *size risk analysis* based on the enterprise size of the counterparties can be performed, or a *sectorial risk analysis* based on the NACE[27] classification, in order to grasp potential risks arising from the cyclicality of a particular business activity. Moreover, a *geographical risk*

[25] The Guideline (EU) 2018/876 of the ECB of 1 June 2018 on RIAD (ECB/2018/16) enforces reporting requirements to NCBs regarding banking groups, according to the consolidation standard identified by IFRS10. The ECB is currently drafting a legal act addressed to the NCAs in order to collect information on group structures encompassing the whole prudential consolidation perimeter as defined by the CRR and Capital Requirements Directive IV.

[26] Basel Committee on Banking Supervision (2006), Working Paper No. 15, Studies on credit risk concentration.

[27] Statistical Classification of Economic Activities in the European Community, commonly referred to as NACE, established by Regulation (EC) No 1893/2006.

analysis (at different levels of granularity) exploiting NUTS[28] information, could be performed in order to measure a potential 'country risk'.

Last but not least, RIAD is useful to identify risks arising from concentration of exposures to counterparties that exhibit dependencies in probability of default, not captured by a sectoral concentration risk analysis (i.e. they do not operate in the same country or in the same sector). This is the third form of concentration risk and it is generally identified as contagion effect. Overall, entities connected via (multiple) bilateral relationships may be affected by a default contagion, or better, as defined by the Basel Committee on Banking Supervision: "the probability of an obligor's default conditional on another obligor defaulting being higher than the unconditional probability of default for the same obligor"[26].

As described in Box 1, multiple types of group structure are available and can be tailored according to the needs of specific users. Exploiting information on group structures maintained in RIAD will make it possible to identify potential concentration risk that may lead to a contagion effect. Different types of analyses can be performed according to the different level of aggregation, for instance: all the entities part of the same conglomerate (e.g. based on control), entities linked by supervisory links and also (non-controlling) relationships through equity investments. Currently, available information on group structures is used internally at the ECB to produce monthly risk analysis reports. The reports use an underlying methodology to estimate risks based on a bottom-up approach starting from granular information on each security relevant for the analysis. The risk profile of the securities is identified through the information collected in the CSDB, for instance: type of asset, rating, coupon information, maturity and embedded options. Credit factor shocks are simulated at the level of corporate and banking groups, as the use of granular credit factor shocks at the level of the individual legal entity could possibly result in underestimating concentration risks on the Eurosystem/ECB balance sheet. Similarly, for reporting purposes, exposures and estimated risks are aggregated at the level of corporate and banking groups in order to appropriately report risk concentrations.

Apart from this example and other possible analyses performed exploiting group structures information, it is also possible to identify contagion effect differently; indeed, counterparties' interlinkages may arise simply because of the business activity. Imagine, for instance, a group of companies involved in the oil refinement process and connected by business relationships because part of the same supply-chain (e.g. upstream company, refining company and downstream company). A negative shock in the crude oil supply could be transmitted to other entities part of the supply-chain. Situations like this, where economic (or business) dependency leads to the existence of interlinkages among entities, are generally defined as group of c*onnected clients*[29].

Regardless of the final purpose of the analysis, the main objective remains the identification of a 'single risk' between two or more counterparties in order to capture

[28] Nomenclature of Territorial Units for Statistics.

[29] Connected clients has the same meaning as defined in Article 4(1)(39) of Regulation (EU) No 575/2013.

a possible contagion effect, without regards of the type of connections the 'single risk' is based on. As already mentioned, 'single risk' cannot only be identified among counterparties part of the same conglomerate (e.g. connected by controlling relationships); indeed, like in the above example of the crude oil supply-chain, a group of connected clients can be identified. Unfortunately, the latter information is not always readily available and, currently, there is no legal requirement to report it to the ECB. The same information gap is faced also by the banks that may offer loans to clients that may have economic dependencies to other entities not part of the clientele of the bank and that are, hence, completely unknown to the bank. Supervisors will benefit from this information; assessing how much of the correlation shown in the data is accounted for in bank's credit risk models[26].

5.3 Wrong Way risk

Besides the above mentioned concentration risk, another important challenge for risk managers is the identification of *Wrong Way risk*. While *'General Wrong Way risk' (GWWR)* arises when the counterparty likelihood of default is positively correlated with negative market events, '*Specific Wrong Way risk' (SWWR) "*arises when future exposure to a specific counterparty is positively correlated with the counterparty's Probability of Default, due to the nature of the transactions with the counterparty"[30]*.*

In particular identifying SWWR in case of collateralised transactions would help assess the quality of assets pledged as collateral by the counterparties in market operations. The risk arises when the collateral pledged by the borrower is guaranteed by an entity part of the same conglomerate of the borrower. SWWR exists because the posted collateral cannot be considered as a strong credit risk mitigation tool; indeed, if a significant negative shock would affect all entities within the conglomerate, the collateral power would be consequently reduced. In extreme negative cases the security could be considered 'uncollateralised'. In other words, the exposure of the creditor to the borrower increases as the probability of default of the latter increases due to a contagion effect in the conglomerate. The ability to identify such situations early on is an important diagnostic feature of a credit risk assessment system, subject to the correct and unique identification of the securities issuers. This is ensured with the full integration of the datasets, namely with the unique identification of issuers of credit instruments and the respective allocation in the various financial (and corporate) conglomerates. A better knowledge of up-to-date banking group structures will serve to fill several information gaps and to help policy makers to reach higher standards of quality.

6 Conclusion

Once AnaCredit has been populated with loan-by-loan information and can be linked with the CSDB/SHSDB through RIAD, policy makers have a powerful tool at their

[30] Article 291(1) of Regulation (EU) No 575/2013.

disposal to compute exposures/indebtedness at entity and group level. This in turn allows for the different types of credit risk analyses that are described in Section 5 above. However, the set of credit risk analyses that can be performed is for sure not limited to the ones mentioned, indeed, thanks to the granular nature of the data, the users are able to aggregate such information as needed. New challenges could be identified and probably new reporting requirements will be set in order to collect relevant information for the central banking and supervisory decision making processes.

The authors noticed already an increasing appeal of the group structures in all their different shapes (financial accounting perimeter, prudential consolidation perimeter and non-controlling ownership), and more demanding requirements in terms of coverage, frequency are coming from different angles. New reporting requirements may, at a first glance, look like an increase of the reporting burden and an increase of costs. This may be true, especially at the beginning when the whole reporting process has to be established. However, a centralised collection of groups reference data will help to reduce the time consumed to search and recollect the information, as it will be available in a unique, centralised and timely updated platform. Considering the relevance of the topic, especially for Banking Supervision purposes, the authors would specifically welcome a possible future expansion of the reporting requirements in RIAD in order to cover also groups of connected clients.

Such a powerful analytical tool requires powerful IT tools to handle the huge amount of granular data being handled. Specifically, there is a demand for the easy and dynamic visualisation of group structures and the overlaps and differences between the multiple group structures that RIAD can generate. Moreover, it will be important that IT tools are used to develop further data quality checks that verify not only the consistency but also the plausibility of the data provided. The ECB, as a statistical authority, has to ensure that the data used for various policy purposes are indeed fit-for-purpose. Efforts are indeed under way to develop such data quality checks at the E(S)CB.