Introduction

The basic principle behind the compilation of euro area financial statistics is that the European Central Bank (ECB) is building the supra-national aggregates on basis of country aggregates. Consequently the data collection at national level has to cope with the usual challenge of identifying and maintaining the population of reporting agents in the individual jurisdictions. In the past the underlying national lists and databases on relevant entities have basically been organised separately in each country. The high demand for more detailed, while supra-nationally synchronized, statistics, however, lead to an intensified cooperation also in the area of (business) registers. This holds for the cooperation at national level between National Central Banks (NCBs) and National Statistics Institutes (NSIs) or Supervisors as well as for the EU wide cooperation among them.

During the last decade the European System of Central Banks (ESCB) has taken two outstanding initiatives in collecting and maintaining pools of shared reference data to be commonly used by compliers in all member states: The “Centralised Securities Database” (CSDB) and the “Register of Institutions and Affiliates Database” (RIAD). The CSDB allows compliers in the field of financial statistics to base their interaction with reporting agents on the most granular level, i.e. to collect the data on stocks and flows for individual financial instruments. RIAD on the other hand represents a classical register of organisational units covering the lowest level of actors relevant for financial transactions (which may be legal units as well as institutional units).

Given its technical capabilities and – noticeably since the introduction of the Single Supervisory Mechanism (SSM) in Europe – the increasing demand for reliable and supra-nationally synchronized reference data on organisational units RIAD is supposed to become a pivotal element in the network of ESCB/SSM wide business register. In addition it may progressively serve as a bridge to the registers operated in the European Statistical System (ESS) and thereby fostering the efficiency of the entire statistical system in the EU.

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1 The author would like to thank Jean-Marc Israël for useful comments. Please note that the views expressed in this paper are those of the author and do not necessarily reflect those of the European Central Bank (ECB).
The paper is structured as follows: Section 1 describes the main features of the new ‘Enhanced’ RIAD system. Section 2 portrays the landscape of reference data needed in the ESCB and in particular the recently introduced SSM. Several examples illustrate that RIAD is indeed more and more becoming a backbone for various business processes. Finally section 3 tries to recap the most striking challenges that the ECB - like any organisation operating a business register - has to cope with. The annex briefly compares the role and relationship of RIAD with two prominent initiatives in the domain supranational registration of business units, the ‘EuroGroup Register’ (EGR) and the “Global Legal Entity Identifier’ (GLEI).

Section 1: Main features of the ‘Enhanced RIAD’ system

Since its launch in 1998, at the start of the euro area, the RIAD platform collects business information from individual ESCB members in order to re-disseminate the combined data to this community and make combined data available to other users (including the public). The focus has been to support the comprehensiveness and consistency of euro area financial statistics by ensuring that the information on statistical reporting population is homogenously defined, complete, accurate and timely.

The current version of RIAD is a complete overhaul of the system that went live in spring 2013. The main achievements were a significantly enhanced data model (incl. for instance relationship data) as well as extended (online) access and reporting facilities (e.g. encompassing a dedicated data warehouse).

More precisely the new data model distinguishes information on

(A) Identification – such as identifiers, address, etc.
(B) Stratification – such as industrial activity, geographical allocation, etc.
(C) Demographic developments – such as birth date, closure date, split, merger, etc.
(D) Relationships between units – such as ownership, control, management etc.

In practice RIAD allows to store more than 50 (categories of) attributes describing an organisational unit, with multiple sub-items, following wherever applicable internationally standardised code lists or in several cases supporting country specific domains.

For each attribute start and end dates for specific values can be assigned, which allows users to navigate through history, i.e. versions of the database.

The lowest level of registration of entities can be ‘legal units’ or groups of them that form ‘enterprises’. It is thus equipped to register all relevant types of institutional units. The fact that also relationship between legal units/ enterprises can be recorded makes it possible to map various types of conglomerates (‘enterprise groups’).

As a result the RIAD data model is compliant with the recommendations given on EU level on the standard structure of business register used for instance in compiling National Accounts or other statistical products.2

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2 See Eurostat ‘Business Register Recommendation Manual’
The architecture of RIAD comprises two modules - a ‘Transactional Subsystem’ and a ‘Data Warehouse’ subsystem. This allows qualified users on the one hand to add, manage and clean reference data in the live, unstable transactional part, while the Data Warehouse on the other hand presents frozen, regularly updated snapshots on which reports and any kind of analysis can be based.

As illustrated in Figure 1 the data processing starts with input from potentially multiple sources (or candidates) which are subsequently condensed to a single ‘authoritative’ (compound) set of reference data. In other words

- potentially several instances of source specific ‘candidates’ can exist in the Transactional module;
- only a single instance of (official) ‘authoritative’ data exist in the Transactional System; ³
- only a single instance of (official) ‘authoritative’ data exists in the Data Warehouse.

![Figure 1: Data processing in the ‘Enhanced RIAD’ System](image)

This technical-operational framework of ‘multiple source management’ is an important prerequisite to organise the simultaneous data input and data quality management in case more than one data source or stakeholder contributes to an attribute of the same unit.

Furthermore RIAD can simultaneously process input data of different confidentiality status (‘free’, ‘not for publication’ and ‘confidential’) for each attribute as indicated by the respective source. (See also section 2.) An elaborate access management ensures that the confidentiality status of information disclosed is in line with the respective profile (‘clearance level’) of an individual user.

³ However, some information may be hidden in the Data Warehouse for specific users due to confidentiality constraints.
Section 2: Current and future stakeholders

The most significant change since the roll-out of the new, enhanced version of the RIAD is the new paradigm to make it a ‘universal’ register, which would be of interest and use for several business areas and work streams in the ESCB/SSM. This section presents the most prominent examples for the envisaged role of RIAD which will now go beyond the classical function in statistics.

2.1 Generation and publication of reference lists

The collection of reference data on several populations of financial corporations that are resident in the EU as well as the regular publication of the respective lists has always been the core service of RIAD\textsuperscript{4}. As illustrated in Figure 2 the interlocutor for filing this information are the NCBs.

\textbf{Figure 2:}

Currently the ECB generates and publishes on its website a daily updated list of ‘Monetary Financial Institutions” (MFIs)\textsuperscript{5}; a list of Investment Funds (IFs)\textsuperscript{6} and ‘Financial Vehicle Corporations’ (FVCs)\textsuperscript{7} are published on a quarterly basis. Altogether by mid-2014 RIAD covers more than 80.000 institutional units resident in the EU.

\textsuperscript{4} See \url{http://www.ecb.europa.eu/stats/money/mfi/html/index.en.html}
\textsuperscript{5} Institutional units classified in the ESA sector S.121, S.122 and S.123.
\textsuperscript{6} Institutional units classified in the ESA sector S.124.
\textsuperscript{7} Institutional units established for the purpose of securitisation, classified in the ESA sector S.125.
According to the recently updated ECB Guideline (ECB/2014/15) a list of ‘Payment Statistics Relevant Institutions’ (PSRIs) will be added by begin of 2015. Furthermore 18 Members States of the EU agreed to contribute by the same time on a best effort basis to a joint list of ‘Holding Companies’ and ‘Head Offices’. The next extension foreseen in this area will be a list of ‘Insurance corporations’ as soon as the respective ECB Regulation would come into force.

2.2 Support of collateral Management

One significant usage of RIAD outside the Statistics domain is the role it has in Market Operation, in particular in the area of collateral management. While RIAD has always served as reference for crosschecks with the list of ‘Monetary Policy Eligible Counterparties’ and the ‘Eligible Assets’, it has recently become the pivotal application for identifying and disseminating so called ‘close link relationships’ between organisational units (see Figure 3).

![Diagram]

Figure 3:

In a nutshell the ownership relationships stored in RIAD are used to identify (chains of) connections between credit institutions participating in monetary policy actions (i.e. central bank re-financing) and issuers or guarantors of securities eligible as collateral underpinning these transactions.\(^8\) This functionality will in due course be complemented by using RIAD also as repository for reference data of debtors behind non-marketable collateral (i.e. loans eligible as collateral).

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\(^8\) See ECB Guideline on monetary policy instruments and procedures of the Eurosystem (recast) (ECB/2011/14)
2.3 Identification of (less) significant banks (or banking groups)

Since the introduction of the Single Supervisory Mechanism (SSM) at the ECB, the need for aligned reference data on relevant (financial) corporations expanded beyond the traditional scope of ESCB objectives. As laid down in the respective legal framework\(^9\) the backbone of the forthcoming new European supervision regime is the official identification of ‘significant’ and ‘less significant’ banks or banking groups. The first being subject of direct supervision by the ECB, while the supervision of the later is led by National Competent Authorities (NCAs).

\[\text{Figure 4:}\]

As is illustrated in Figure 4 RIAD is in this context used to process information on potentially relevant (supervised) financial corporations that is directly provided from NCAs and combines it with the information received from NCBs. In parallel a ranking of banks and banking groups on basis of indicators of size and relevance is generated, which eventually allows to produce various types of reports describing the so identified population of (less) significant institutions.

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\(^9\) SSM Framework Regulation (ECB/2014/17)
2.4 Processing of supervisory templates

The support function of the Statistics area for SSM tasks also includes the loading and processing of balance sheet data of supervised banks according to the ‘Implementing Technical Standards’ on supervisory reporting (ITS).\(^{10}\) In this context RIAD is used to verify the actual reporting population (i.e. the list of ‘significant institutions’) for which supervisory data need to be provided to the ECB. As the recommendation among NCAs is to apply the LEI code for identifying the respective reporting units, RIAD needs to synchronise this type of identifier within its on repository of identification codes.

Figure 5 illustrates the underlying data flow. Banks are therefore not only obliged to apply for a licence at NCAs but at the same time present the LEI they have been assigned by so-called ‘Local Operating Units’.\(^{11}\) As RIAD registers all entities that NCAs have recognise as supervised credit institutions it also takes care of synchronising the LEI with its own RIAD code.\(^{12}\)

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\(^{10}\) The ITS are part of a broader set of supervisory reporting (FINREP, COREP) which aim at implementing uniform reporting of own-funds and capital requirements, reporting of financial information, reporting on large exposures, etc.

\(^{11}\) See also the annex.

\(^{12}\) Also known as MFI code.
2.5 Registration of lenders and borrowers (forthcoming)

A final example for its backbone role in the ESCB/SSM context is that RIAD is foreseen to substantially support the forthcoming project of a joint European platform for collection and exchange of credit data. While an operator of a national Central Credit Register needs to have sufficient knowledge of reference data on domestic lender and borrowers (via numerous domestic registers and databases), RIAD will help to complement and verify the information on non-domestic (lenders and) borrowers involved in cross-border loans (see Figure 5).

Figure 5:

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13 This project is also known as ‘Analytical Credit Dataset’ (AnaCredit).
Section 3: Challenges

The special challenges that RIAD is exposed originate from its nature of a database linked to multiple inputs and aiming to serve the business cases of several user groups. This materialises in the need to master various aspects of governance comprising at least:

- the identification of relevant sources,
- the legal basis for collection and (licensing for) subsequent usage of data and
- the necessary data quality management competences and responsibilities.

With respect to the first aspect it is less the question whether the use of more than one source would indeed help improving the quality as individual data providers can obviously have specific strengths due to their assigned competence (e.g. in statistical classification, supervisory related aspects or privileged access to information). The challenge is rather the optimal selection of sources for specific attributes, an issue that complicates even more when considering that not all sources obey to the same frequency and timelines of updates. The way RIAD tries to cope with this puzzle is that it technically allows calibrating the selection of sources of each individual attribute in each geographical domain (residency) via parametric filters.

Second, a sound legal basis for collecting and using reference data is fundamental in the ESCB/SSM context. In the past the data input has been entirely driven by statistical Regulations or Guidelines that determine legally binding obligations for NCBs to explicitly provide specific information with a certain frequency and timeliness. New stakeholders representing additional business processes such as Supervision or Market Operations so far do not have any direct reference to process reference data in supra-national tools like RIAD. On the other hand the specific legal frameworks of these non-statistical areas do also not exclude the option of using a common database for maintaining relevant reference data. The latter is even more reasonable as the respective reference databases at national level (operated for instance by various business areas inside NCBs) may ultimately rely on the same national (administrative) sources. The strategy adopted in RIAD is to use to the largest extent possible all available sources in the computation of ‘authoritative’ views on business units, while protecting on the other hand business specific information via special application roles (‘views’) and confidentiality filters.

Finally an optimal organisation of the necessary data quality management must be found – not least because of limited (human) resources. Based on the assumption that national experts would not only have the adequate legal access rights to information but most likely also the best background knowledge the basic principle in RIAD is that data quality managers can only intervene in data on entities resident in their own country. As this rule eventually limits the quality management activities to EU resident entities, the second rule is that experts at the ECB provide the first line support for entities resident outside the EU.

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14 This holds at least within the Eurosystem, as for instance laid down in the ECB Guideline (ECB/2014/15).
15 In the context of collateral management the ESCB legal advisory committee (LEGCO) explicitly agreed that Market Operations would be allowed to use supervisory information on group structures.
16 As pointed out above the EuroGroup Register with its strict classification “for statistical usage (only)” represents a case where such a strategy is prohibited. The most that the ESCB/ESS representatives may achieve is that at least common statistical classifications (such as NACE or ESA sector) would become publically usable.
prominent exception is that RIAD allows data quality managers also registering and altering data that
relate to entities involved in direct cross-border relations, such as ownership or control relationship
between entities resident in different countries or relevant mergers or splits.¹⁷
In addition to the points discussed above the operator of RIAD is faced with numerous questions
centering the adequate technical channels for data acquisition, backflow or the choice of optimal
reporting tools etc. Here the challenge is that limited resources make it impossible to support each
individual business cases with a tailored construction and dissemination of the desired data.

¹⁷ In the context of managing data of conglomerates / groups is also considered that experts from the country
hosting the head of a group would be technically supported to enhance the data quality also for units outside their
jurisdiction.
Annex – RIAD and the EGR and the GLEI initiative

The work around RIAD carried out by European Central Banks coincides with two prominent initiatives in the domain supranational registration of business units.

Eurostat is since long pursuing the project of an ESS wide platform to enrich and quality manage information on cross-border relationship within enterprise groups that have at least one operative unit in the EU. Today the ‘EuroGroup Register’ (EGR) produces an annual frame of company structures that are relevant for various European globalisation statistics, such as Foreign Direct Investment (FDI) and Foreign AffiliaTes Statistics (FATS).

While the ERG is traditionally focusing on genuinely non-financial groups the current set-up foresees the potential contribution from reference data on financial corporations available in Central Banks via Statistical Offices to Eurostat (‘unilateral approach’).

The EGR and RIAD are connected at least in two ways:

- The underlying data (exchange) models are compatible (as for instance set out in Regulation (EC) No 177/2008)
- RIAD is allowed to use data of commercial sources feeding the EGR

However, the fact that the EGR is substantially benefiting from information and data quality checks provided by Statistical Offices and thus supposed to be exclusively “for statistical usage” currently limits options for (re)usage and interconnections to business registers in the ESCB/SSM context.

The ‘Global Legal Entity Identifier System’ (GLEIS) has been envisioned by the G20 and Financial Stability Board to register legal entities and assign ‘Legal Entity Identifiers’ (LEIs) on a global basis. To some extent the plan to make RIAD (including the business identifiers its carries) the master database on reference data of business units relevant for ESCB/SSM purposes overlaps or potentially complements this project. Considering three main characteristics of business registers the two initiatives, however, reveal the following differences:

<table>
<thead>
<tr>
<th>A register needs …</th>
<th>RIAD</th>
<th>GLEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition on the ‘relevant’ objects</td>
<td>(Financial) institutions relevant for various ESCB business processes – defined in respective legal frameworks</td>
<td>Universal (&quot;all entities involved in financial transactions&quot;)</td>
</tr>
<tr>
<td>Standard defining the rules of assigning IDs and relevant reference data</td>
<td>Organised centrally in RIAD, driven by the business cases covered</td>
<td>ISO 17442 / GLEI data catalogue or operational rules</td>
</tr>
<tr>
<td>Responsible actors</td>
<td>NCBs (in cooperation of NCAs)</td>
<td>Organisational units themselves in cooperation with third parties (LOUs)</td>
</tr>
</tbody>
</table>

18 The respective tests are still ongoing.
In other words, the GLEI can be described as a global initiative targeting the financial industry as a whole\textsuperscript{19} with the aim of assigning a single common identifier and to store a selected set of reference data in central repositories. To this end the registration and data quality management is transferred to the cooperation of the individual business unit themselves and third parties\textsuperscript{20} assigning a LEI and maintain the respective meta-data.

RIAD on the other hand is a supra-national initiative of ESCB members based on the principle of collecting reference data from various sources (in particular administrative, supervisory or statistical databases) and actively select the optimal information (at a given point in time). The focus is on all (special) data attribute needed for specific business processes in the ESCB/SSM. Consequently RIAD also collects and maintains an open number of identifiers brought forward by the different sources. A LEI code, to the extent available, will be one of them.

**Glossary**

- **EBA**  European Banking Authority
- **EGR**  EuroGroup Register
- **ESCB**  European System of Central Banks
- **ESS**  European Statistical System
- **GLEIS**  Global Legal Entity Identifier System
- **LEI**  Legal Entity Identifier
- **NCA**  National Competent Authority (for banking supervision)
- **NCB**  National Central Bank
- **RIAD**  Register of Institutions and Affiliates Database
- **SSM**  Single Supervisory Mechanism

\textsuperscript{19} Analogous to the SWIFT framework
\textsuperscript{20} The so called ‘the Local Operating Units’ (LOUs).