Investor protection

The market for small credit rating agencies in the EU

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Summary

In Europe, the three largest CRAs have for years had an overall market share of more than 90 %. EU legislators sought to reduce this imbalance 10 years ago by supporting the use of small CRAs in Europe. This article applies SupTech-related techniques to take stock of market conditions since then, using a unique dataset containing all EU ratings issued and outstanding since 2015 (when the CRA Regulation's reporting requirement entered into force), covering EUR 20 tn worth of EU financial products and nearly 6 000 issuer ratings. Using network analysis techniques, it is clear that the landscape for small CRAs at the EU level is a challenging one: small CRAs are used almost exclusively in local single-rating markets (the 'periphery'), and are locked out of the larger 'core' market (of issuers seeking more than one rating for their products or themselves). This larger market is shared almost exclusively among the three largest CRAs, and the associated industry-wide Herfindahl-Hirschman Index (HHI) levels are consistently at levels usually deemed to be "highly concentrated". Lastly, the article introduces a simulation exercise for alternative legislative rules designed to boost competition in EU markets for credit ratings. Strengthening legislative requirements to make use of small CRAs when seeking an additional rating for a product or issuer is associated with an average reduction in overall EU CRA industry concentration of roughly 40 to 55 %, leading to HHI levels that are no longer "highly concentrated" from a competition perspective.

Introduction[165]

In Europe, there are many Credit Rating Agencies (CRAs) whose ratings are eligible to be used for meeting regulatory requirements, such as a minimum number of ratings, and calculations, such as the inputs to capital requirement formulae. However, despite the large number of agencies, the respective market shares achieved by each CRA have evolved little in recent years, including those of small CRAs, while the aggregate EU market share of the three largest CRAs has consistently exceeded 90 %.

European legislators have previously identified these high levels of market concentration as a key issue, justifying legislative reform. For example, a 2011 European Commission Impact Assessment[166] accompanying a proposal[167] to modify the CRA Regulation (CRAR[168]), noted a number of barriers to effective competition in EU credit rating markets, and noted that "*the structure of the market for rating services unveils a level of concentration which is significantly high*" and that "*For investors…the high market*

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[165] A near-final draft of this article was shared with all currently ESMA-supervised CRAs for a check of any factual errors or inconsistencies.

[166] Commission Staff Working Paper Impact Assessment accompanying the document Proposal for a Regulation amending Regulation (EC) No 1060/2009 on credit rating agencies and a Proposal for a Directive amending Directive 2009/65/EC on coordination on laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) and Directive 2011/61/EU on Alternative Investment Fund Managers, Brussels, 15.11.2011; SEC(2011) 1354.

[167] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EC) No 1060/2009 on credit rating agencies, COM/2011/0747 final - 2011/0361 (COD)

[168] Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit rating agencies.

concentration emphasizes the problem of overreliance on the few international rating agencies". The subsequent final modifications[169] in mid-2013 to the CRAR contain several articles that seek to remedy this situation and boost competition among CRAs (discussed in the next section).

Nearly 10 years after the initial Commission proposal, this article aims to take stock of the situation in EU credit rating markets at the current juncture. In particular, the article relies on a unique dataset containing the entire timeline, since 2015 (when the CRAR reporting requirement entered into force), of rating actions on EUR 20 tn worth of EU financial products and nearly 6,000 issuers rated by an EU-registered CRA. The article aims to consider the perspective of a small registered CRA that is active in the EU, and examines the network of joint ratings on the same product and entities to build up a novel picture of concentration in the EU CRA industry. In addition, a simulation exercise examines the possible effect of alternative policy measures on a standard measure of market concentration.[170]

The next section provides further motivation for this analysis, including additional background on the key legislative provisions of the CRAR that aim to stimulate competition among rating agencies.

Why conduct this analysis

Background on the CRA Regulation

The CRAR contains several articles that seek to encourage competition in European credit rating markets. In particular, Article 8d requires that, where an issuer or related third party "intends" to appoint two or more CRAs, that issuer or related third party must consider appointing at least one

CRA with no more than 10 % market share (hereafter denoted a "small CRA") if there is one "available" (i.e. with the necessary expertise to rate that product). Article 8d then specifies that, where the issuer or related third party does not appoint at least one small CRA, this should be documented.[171]

ESMA is empowered under the CRAR to register and supervise EU-based CRAs. Registration with ESMA in turn enables CRAs' ratings to be used for regulatory purposes, for example when calculating capital requirements for various products. However, although ESMA supervises CRAs, Article 8d of the CRAR is addressed to issuers and related third parties. The supervision and enforcement of these provisions are therefore entrusted to Sectoral Competent Authorities (Article 25a of the CRAR). In other words, the legislative intent behind Article 8d is to affect the decisions of issuers and related third parties. Over time, it is expected that these decisions will stimulate greater use of small CRAs and, therefore, support the development of competition among all EU-registered CRAs.

The CRAR recognises that it may not always be easy to identify smaller CRAs that could be capable of providing a credit rating for an issuer or its issuances. For this reason, the CRAR requires ESMA to publish an annual report on CRAs' market shares (ESMA, 2020). This report provides statistics—which are aligned with the legal definitions set out in the CRAR—of the respective market share of each ESMA-registered CRA's overall EU market share. This publication can thus enable issuers or related third parties to easily identify an EU registered CRA with less than 10 % market share.

The ESMA CRA market share report also includes an overview of the types of credit ratings offered by each CRA, such as ratings related to non-financial corporate entities and issuances,

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[169] Regulation (EU) No 462/2013 of the European Parliament and of the Council of 21 May 2013 amending Regulation (EC) No 1060/2009 on credit rating agencies.

[170] The specific article of the CRAR on which this analysis focuses is not within ESMA's regulatory and supervisory mandates—ESMA is producing this analysis from the perspective of its investor protection mandate, as set out in the ESMA Regulation.

[171] There is a second competition-related article in the CRAR: Article 8c, which requires that at least two different CRAs be hired to rate structured finance instruments (regardless of size). Article 8d covers ratings on both instruments and entities, whereas Article 8c only concerns a subset of instruments (structured finance instruments). Article 8d therefore has a broader scope

than Article 8c. Furthermore, Article 8d is relatively more relaxed than Article 8c: under Article 8d, issuers must only "consider" appointing a small CRA and, if they do not, must "document" this. In contrast, under Article 8c, as soon as a structured finance instrument is issued, it must be rated by two or more CRAs (and the issuer must also, as per Article 8d, "consider" appointing at least one small CRA to rate that structured finance issuance or otherwise "document" that it has not done so).

In addition, a third competition-related article in CRAR is Article 6b, which establishes a rotation requirement among CRAs with respect to re-securitisations. The analysis contained in this paper relates to considerations on the extent of competition between small and large CRAs and, therefore, focuses on Article 8d.

financial institutions (excluding insurers), insurers, sovereign and public finance, and structured finance. Furthermore, the report displays each ESMA-registered CRA's market share by asset class. This asset-specific market share can be useful because some CRAs may have a larger market presence in specific asset classes than is implied by their overall market share.

These additional elements aim to help market participants easily identify small CRAs and, therefore, support the objectives of Article 8d of the CRAR. In addition, with a view to complementing and improving the effectiveness of these provisions and assisting the Sectoral Competent Authorities (SCAs) that supervise the provisions of Article 8d, on 6 April 2017, ESMA published a Supervisory Briefing setting out "A Common Approach to the CRA Regulation's Provisions for encouraging the use of smaller CRAs" (ESMA, 2017). Its purpose was to provide guidance to the SCAs on the application of Article 8d by providing:

— a common Supervisory Approach as to which issuers and related third parties are covered by Article 8d;

— a standard form for issuers or related third parties to "document" cases where a small CRA was not used.

Why assess the impact of Article 8d

As mentioned in the previous section, Article 8d forms part of the legislator's efforts "*to increase competition in a market that has been dominated by three credit rating agencies*" (recital 11 of the 2013 CRAR amendment). In line with ESMA's relevant mandates for consumer protection and trends, risks, and vulnerabilities detection (Articles 9(1) and 32 of ESMA's founding Regulation[172]), as well as ESMA's unique access to the European Rating Platform (ERP) dataset—

discussed in the next section—it appears appropriate to examine the extent to which Article 8d has been successful in narrowing the gap between small and large CRAs since June 2015.

This is a topic that has previously been acknowledged as important in theory, but that could not yet be examined using data. In other words, it was previously not easy to understand the effectiveness of Article 8d in supporting the usage of small CRAs.[173]

Moreover, in absolute terms, the sheer size of EU credit rating markets makes it worthwhile to examine this issue. Reporting to the ERP began on 1 July 2015, and by the data cut-off date (3 May 2021), a total of EUR 20 tn worth of instruments had been reported (70 970 total instruments), along with ratings on issuers or related third parties (7 697 entities whose instruments are rated and/or who are themselves rated).[174]

Now that the ERP has been established and functional for several years, such a preliminary assessment can be conducted. The next section describes the dataset in greater detail, as well as some high-level statistics concerning EU credit rating markets.

European Rating Platform and other data used

Description of the dataset

The analysis in this article relies primarily on information contained in the ERP, which by law has been collecting information on credit ratings on all outstanding instruments and issuers since 1 July 2015.[175] The ERP dataset includes information on every rating action taken on each

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[172] Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority)

[173] For example, ESMA's Technical Advice to the Commission, provided as part of Article 39(5) of the CRAR, noted that "It is not currently possible to determine the scope of the markets on which Article 8d might have an impact as the number of entities and instruments which have multiple ratings cannot be identified through the CEREP database. However, the ERP will allow investors to see which CRAs have issued a credit rating on a particular entity or instrument so ESMA will be able to carry out this assessment in future." (ESMA, 2015)

[174] Using the maximum value reported per instrument in the ERP anytime since 1 July 2015. The maximum value approach is more accurate than taking the total value in the ERP as at the latest-available data cut-off date, because there are instruments that amortise over time, such as securitisations.

[175] Commission Delegated Regulation (EU) 2015/2 of 30 September 2014 supplementing Regulation (EC) No 1060/2009 of the European Parliament and of the Council with regard to regulatory technical standards for the presentation of the information that credit rating agencies make available to the European Securities and Markets Authority

instrument and issuer, and on which CRA took the action and on what date.

The ERP also includes additional descriptors of the instrument (e.g. ISIN code, volume at issuance, issuance date, and maturity date) and of the issuer (e.g. industry and Legal Entity Identifier(LEI)). We then add information from the Financial Instrument Reference Data System (FIRDS) and the Global Legal Entity Identifier Foundation (GLEIF) master copies of the LEI / Entity Name mappings. These supplementary datasets enable quality checks to be performed, for example to confirm that CRAs are reporting issuer LEI codes consistently across instruments and issuers (thus enabling information to be aggregated).

Table RA.28 provides a high-level overview of the size the ERP dataset, broken down by instrument category and issuer rating. The largest category of instruments by number and by value consists of instruments issued by financial institutions (38 089 instruments, worth a total of EUR 8 tn). Finally, the ERP dataset includes 5 917 issuer ratings as well, which brings the total size in terms of number of unique rated instruments or entities to 76 612[176], from 7 697 unique issuers.

RA.28
Breakdown of ERP dataset by category
EUR 20 tn of rated instruments

Category	Value (tn EUR)	Number	Number of issuers
Instrument: Corporate	6	11 968	1 801
Instrument: Financial	8	38 089	640
Instrument: Insurers	0.3	521	107
Instrument: Sovereign	3	10 371	346
Instrument: Structured Finance	2	10 021	678
Issuer Ratings	N/A	5 917	5 917
Total	20	76 612	7 697

Note: The table displays the information available in the ERP dataset, covering both instrument and issuer ratings with at least one rating action on or after 1 July 2015 (up to and including 3 May 2021). Outstanding amounts are expressed in tn EUR, using the maximum value over the lifetime of the instrument. Issuer ratings total is not equal to sum of table rows: one issuer can both issue rated instruments and be rated itself.
Sources: ERP, FIRDS, GLEIF, Refinitiv, ESMA.

In order to establish some context for the remainder of the analysis, Table RA.29 below summarises the overall market share and number of CRAs that are or have been registered by ESMA and for which instruments are reported in the ERP (only covering solicited ratings for EU issuers, see next section for further details). This table compiles the information provided in ESMA's annual market share calculation reports discussed above. It is clear from this table that the overall EU market share captured by small CRAs has not evolved much over time, despite their regular presence in the market.

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[176] Compared with 167 531 instruments in the FIRDS as at the same data cut-off date. In addition, outliers in terms of the nominal outstanding value have been removed out of prudence (using the 97.5th percentile—which is set at EUR 2.2 bn. This has the effect of removing 2 209 instruments whose nominal value is allegedly EUR 22.6 tn (i.e. c. 53 % of the dataset).

RA.29
Breakdown of ERP dataset by category
Small and large CRAs market shares have not evolved

Year	Market share: Small CRAs	Market share: Large CRAs	Number of small CRAs	Number of large CRAs
2015	8%	92%	24	3
2016	7%	93%	24	3
2017	7%	93%	24	3
2018	7%	93%	25	3
2019	8%	92%	25	3
2020	9%	91%	24	3

Note: The table displays the market share for each registered CRA, as calculated by ESMA in accordance with Article 8d(3) of the CRAR, using the annual turnover generated from credit rating activities and ancillary services at group level in the EU for that CRA or group of CRAs. The number of registered CRAs reflects all CRAs registered with ESMA as presented in its annual market share calculation report. When calculating the number of CRAs, different registered CRAs within the same group are classed as one CRA. INC Rating was de-registered on 26 November 2020—if this is taken into account, the number of small CRAs in 2020 is 23 rather than 24. See https://www.esma.europa.eu/supervision/credit-rating-agencies/risk
Source: ESMA

The next section provides further background on the data sample and methodology for this article.

Necessary assumptions for the analysis

Some further interpretations of Article 8d and the dataset were necessary in order to be able to produce the analysis in this article.

For example, it is challenging to fully assess the extent to which Article 8d has been respected, insofar as observing whether an issuer has truly "documented" the fact that it did not include a CRA would require detailed investigation of thousands of documents, which is clearly beyond the scope of this analysis (and not within ESMA's regulatory and supervisory mandates). Instead, the ERP can be used to at least observe the

extent to which small CRAs have been hired when two or more CRAs are rating an instrument or entity.

Further assumptions behind this analysis include:

— *Scope of instruments to include:* Only solicited, long-term, and local currency ratings for instruments and issuers located in the EU have been included in this analysis.

— *Start date:* Only instruments issued on or after 1 July 2015 have been included, plus all issuers in the ERP.[177]

— *No grace period for applicability of Article 8d*: With respect to ratings on instruments, it is assumed that Article 8d applies starting from the issuance date of the instrument. An instrument is still flagged as possibly not complying with Article 8d if it does not meet these articles for even a few days after its issuance date. The rationale is that, from an investor protection perspective, having a rating (and accompanying assessment) from a CRA at issuance can be an important factor in ensuring that investors make informed investment decisions.

— *Time period during which Article 8d applies*: In line with the previous assumption, it is also assumed that Article 8d applies for the entire time that an instrument or issuer is rated by two or more CRAs. This assumption appears the most reasonable of the possible choices: for example, if one instead assumed that Article 8d only applied for the first 3 days after issuance of a 30-year securitisation tranche, then an issuer could in practice seek to comply only for those three days and then remove the second rating for the remaining 29.99 years, which would surely be against the spirit of Article 8d.

Incorporating the above considerations enables some necessary data cleaning steps to be performed.[178] Thereafter, one can examine the impact that Article 8d has had on EU credit rating markets. This is the focus of the following section.

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[177] There also exist instruments that were retired or matured before 1 July 2015—these instruments would not be required to be reported to the ERP. In turn, this means that the ERP cannot be considered as an authoritative description of the market for EU credit ratings prior to 1 July 2015.

[178] These include conversion of outstanding amounts to euro using the corresponding exchange rates as of 19 May 2021, checks on the LEI being reported (e.g. for a securitisation, the LEI of the Securitisation Special Purpose Entity or the LEI of the originator of the

underlying assets). Other checks include verifying the most plausible country being reported in the 'Country' field of the ERP: the country where the instrument is listed, where the issuer is established, or (for structured finance ratings) where the underlying assets being securitised are located (and, where there are securitised assets located in more than one country, which country is likely to be reported).

First indications of potential business for small CRAs

As described above, Article 8d specifically applies where at least two or more CRAs have been appointed to rate either an issuer or an instrument. In the dataset, a total of 2 693 issuers or related third parties have been rated by at least two CRAs, out of 7 697 total issuers in the sample. Furthermore, 31 518 instruments have been rated by two or more CRAs, out of 70 970 total instruments in the sample.

Out of the sample of 2 963 issuer ratings and 31 518 instrument ratings rated by at least two CRAs, it appears that 2 684 or about 90 % of multiple CRA-rated issuer ratings (by number), and 30 948 or about 99 % of instrument ratings (by number, worth a total of about EUR 11 tn) have been rated by two or more CRAs, of which none are small.[179] In consolidated terms (since some instruments are rated but the issuer itself is not rated), this implies that 4 169 issuers should be complying with the Article 8d documentation requirement.

The next step would be to determine whether, in all of these cases, the fact that a small CRA was not appointed has been documented by the issuer, as required under Article 8d. Such checks could form part of the supervisory activities of the SCAs—this would involve contacting a total of 4 169 issuers.

Table RA.30 below explores the share of each issuer's instruments that have been rated by two or more CRAs without including any small CRAs and would therefore need to be documented. Table RA.30 in principle could support SCAs' processes to determine which issuers to focus any supervisory efforts on. The table shows that the sample of 30 948 instruments that require documentation under Article 8d is skewed: more than half of issuers in this group have 75% or more of their instruments (in terms of value, i.e. EUR 6.5 tn out of a total of EUR 11.2 tn) rated by two or more CRAs, of which none are small.

RA.30
Categorising issuers with Article 8d documentation needs
EUR 11 tn worth of assets need documentation

Share of issuer instruments needing documentation (per cent)	Number of instrument issuers in this category	Total value of instruments in this category (bn EUR)	Number of instruments in this category
0.1 to 25%	139	227	867
25 to 50%	488	1 602	5 535
50 to 75%	286	2 898	7 538
75 to 99.9%	369	4 778	13 277
100%	948	1 745	3 731
Totals	2 230	11 251	30 948

Note: The table allocates issuers in the sample to categories, based on the share of each individual issuer's instruments that are rated by two or more CRAs, none of which are small. The share of each issuer's instruments in this category is expressed as the total value of instruments rated by two or more CRAs (none of which are small), divided by the total value of all instruments issued by that issuer. Instrument value is calculated as the maximum value outstanding over the lifetime of the instrument in the ERP. Only issuers whose instruments have been rated are shown in the first column (issuers that are rated but do not have any instrument ratings are not shown in the table).
Sources: ERP, FIRDS, GLEIF, Refinitiv, ESMA.

Concentration in EU credit rating markets

The ERP data can also be used to examine the extent to which issuers use certain CRAs—or, from another perspective, the extent to which the market for ratings is dominated by certain CRAs. This issue appears to already have been anticipated in the CRAR: recital 11 therein mentions "*a market that has been dominated by three credit rating agencies*". Indeed, the cleaned ERP dataset is in fact capturing a network: that of connections between the issuers hiring CRAs to provide ratings and the actual CRAs hired.

Chart RA.31 below illustrates a snapshot of this network, using the set of EU ratings outstanding as at the end of 2020 for ESMA-registered CRAs.

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[179] Alternatively: 10 % of issuer ratings and 1% of instruments—both by number—would not need any documentation). In other words, at some point in their (i.e. the instrument's or issuer's) lifetime between 1 July 2015 and the data cut-off date of 3 May 2021, two or more CRAs were providing ratings on 2 684 issuers and 30 948 instruments, and none of these CRAs were "small CRAs", despite the fact that, in this period, there was at least one small CRA available and capable of rating that instrument and/or issuer

CRAs are represented with red circles, issuers are represented by blue circles, and a connection between an issuer and a CRA (i.e. an issuer appointing a CRA for an instrument or issuer rating) by a black line. The size and position of each CRA reflects the number of ratings that it provides — larger and more centrally-located circles therefore imply a greater market share captured by the CRA.

Chart RA.31 visually confirms that three CRAs capture the vast majority of ratings issued in the EU. The remaining CRAs appear to be far less used and are further away from the 'centre' of the industry, which demonstrates that most of these small CRAs are operating in separate product and geographic markets. Thus, despite the policy intentions set out in the CRAR, including in the above-mentioned recital 11, the 'core' EU market for credit ratings continues to be "*dominated by three credit rating agencies*".

Furthermore, small CRAs appear to be used chiefly when only one rating is required. This can be seen in Chart RA.31 by the fact that many issuers doing business with small CRAs are located (on the graph) near those CRAs and are thus on the outside of the graph. In contrast, many of the issuers that do business with large CRAs are located *between* the large CRAs (i.e. many blue dots are between the large CRAs and have connections — black lines — running to more than one large CRA). The appearance of several circular layers of blue dots in the chart relates to the amount of connections (i.e. the amount of ratings purchased) by an issuer. Issuers with a greater number of ratings obtained from CRAs (i.e. that provide more business to CRAs) are located more towards the centre of the network.

Similarly, Chart RA.31 suggests that there are comparatively few cases of a small CRA being used in conjunction with a large CRA (i.e. a line from a blue dot to both a CRA located on the periphery of the graph—a small CRA—and to a CRA located in the centre of the graph—a large CRA). In most cases of multiple CRAs being assigned (i.e. more than one black line going from a single blue dot), it is multiple large CRAs that are hired.

Thus, Chart RA.31 suggests that small CRAs tend to have their own clients (which almost exclusively rely on those small CRAs) in smaller markets for credit ratings (i.e. the 'periphery') and to be locked out of the larger 'core' EU market consisting of issuers that seek more than one rating. This larger 'core' market is being shared almost exclusively among the large CRAs.[180]

The present section has taken a backward-looking perspective on the entire universe of CRA ratings at once. The next section takes a more dynamic perspective, and explores the extent to which alternative formulations of Article 8d could have potentially affected the extent of concentration in EU credit rating markets.

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[180] In this respect the 'core' and 'periphery' structure can potentially be interpreted as the 'international market ratings issued in the EU' versus 'ratings issued in individual national markets within the EU'. Under this perspective, many of the issuers that do business with large CRAs are pan European or global issuers seeking ratings for use in international markets. This stands in contrast to smaller issuers that seek ratings for products, such as debt issuance, that is only aimed at a domestic investor base. See section 3 (pages 13-57) of ESMA's Technical Advice: Competition, choice and conflicts of interest in the credit rating industry, published on 30 September 2015.

RA.31
Issuer's use of credit rating agencies in Europe
Three CRAs dominate the European market for credit ratings
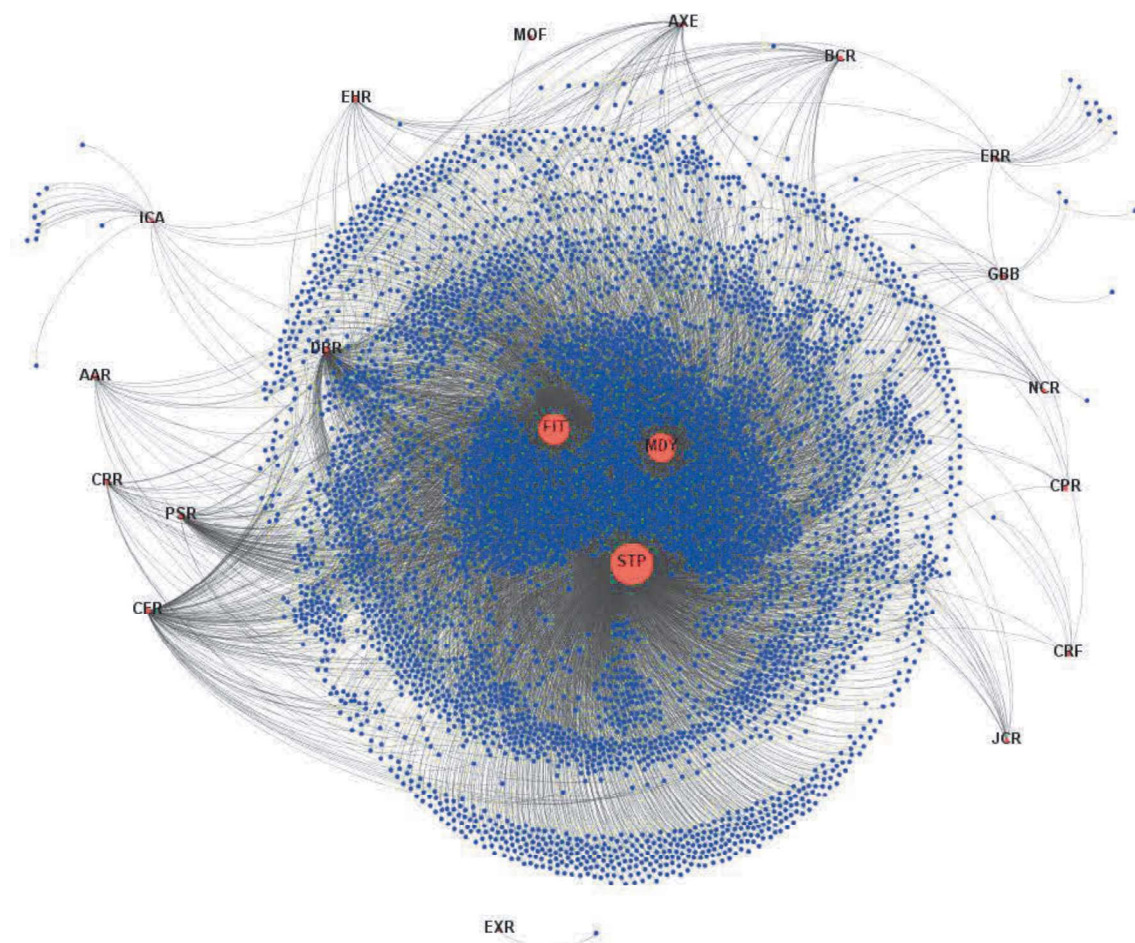
Note: The chart displays the connections between issuers (blue dots) and EU-registered credit rating agencies (CRAs; red bubbles) using the set of outstanding EU ratings as at end-2020 for ESMA-registered CRAs. The number of CRA ratings on issuers' instruments are aggregated for each issuer; the size of each CRA circle reflects the relative number of ratings they provide. CRA names have been shortened to facilitate display. *Sources*: ERP, FIRDS, GLEIF, Refinitiv, ESMA.

Simulating the impact of alternative policies

The ERP dataset also makes it possible to conduct simulations of how EU ratings markets might have developed under alternative policies that aim to stimulate the use of small CRAs in Europe. This section outlines an initial investigation performed in this direction.

The goal is to obtain greater clarity on what alternative policy measures would result in a European market that is no longer "*dominated by three credit rating agencies*". It is emphasized that there are no correct or incorrect answers to this exercise; like all simulations, the purpose is to better understand the contours of possible courses of action. Whether those actions are

desirable or not is a question for elected representatives.

To perform these simulations, individual EU rating markets are reconstructed at various time windows, using the ERP dataset. In other words, snapshots are produced that reflect the landscape for EU credit rating services at that date. A total of thirteen snapshots are produced: starting from 1 July 2015 to 31 December 2015, and every six months thereafter until the first half of 2021 (i.e. roughly six years of data). Each snapshot reflects outstanding instrument and issuer ratings at that date, plus new issuances between the previous date and the current one, less maturing instruments, rating withdrawals. New CRA registrations and CRA de-registrations are also reflected.

Ratings data on issuers and instruments located in all EU countries (plus the UK—given that the data go back to many years before Brexit) are included, reflecting Corporate, Financial, Insurer, Sovereign, and Structured Finance ratings. Markets are defined at the local level, i.e. for a specific product type (see previous sentence) within a single EU country. This definition reflects the Commission's own impact assessment as well as ESMA's 2015 technical advice (see Introduction). This results in a total of 140 local markets within the EU being defined.

At each snapshot date, a standard market share-based measure of market concentration is calculated—the Herfindahl-Hirschman Index (HHI).[181] The HHI approaches 0 when a market is occupied by a large number of firms of relatively equal size. The maximum HHI is 10 000 points, which signals that a market is controlled by a single firm. Thus, the higher the HHI, the more concentrated the market.

The HHI is taken as a rough measure of competition in EU credit rating markets. There are many other ways to assess the extent of competition in a given market, such as the extent of cross-shareholdings, barriers to entry, reputational effects, and so forth.[182] However, the HHI is one of the most well-established measures and, furthermore, can be easily calculated using the ERP dataset. It is commonly used by competition authorities, such as the European Commission's DG COMP and the United States Department of Justice (DoJ) Antitrust Division,

when considering the competition impact of two or more parties merging.[183,184]

It is generally accepted that a market with an HHI of 2 500 points or above is highly concentrated, and that a high HHI would trigger competition concerns.

The HHI has been calculated for each of the following variations of Article 8d, in each time window mentioned (see the Annex for further details on the simulation steps):

— *Baseline (actual situation)*: Keeping the version of Article 8d as it is in the CRAR—this is the 'baseline' against which the subsequent variations are compared. There are no simulation steps here—actual 'real-life' data is used to calculate the HHI.

— *Scenario 1: If hiring two CRAs, must use one small CRA:* Article 8d is modified to read that, if an issuer obtains two or more ratings, then the issuer must appoint (rather than "consider" appointing) at least one small CRA.

— *Scenario 2: Must always hire two CRAs, of which one must be a small CRA:* issuers and instruments that seek to be rated must always obtain at least two ratings, of which at least one must come from a small CRA.

These scenarios are intended to assess the impact on local credit rating markets of straightforward modifications to the current Article 8d. Scenario 1 essentially strengthens the language of Article 8d—whereas Article 8d currently provides that an instrument/issuer with two or more ratings must "consider" hiring a small

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[181] The Herfindahl-Hirschman Index is equal to the sum of the squared market shares of each CRA active in a given time window, where the shares are percentages in decimal format. Note that market share here is calculated in terms of ratings provided, rather than the revenue-based measure required under the CRAR. The latter has been deemed to be an imperfect measure of market share due to difficulties in estimating revenue from "ancillary services"—see pages 39-40 of ESMA's Technical Advice: Competition, choice and conflicts of interest in the credit rating industry, published on 30 September 2015.

For example, in a market with only three CRAs, if CRA 1 rates 30 % of outstanding instruments and issuers, CRA 2 rates 40 % of outstanding instruments and issuers, and CRA 3 rates 20 % of outstanding instruments and issuers, then the Herfindahl-Hirschman Index is $30^2 + 40^2 + 20^2 = 2,900$. In a market with only two CRAs—as is often the case in many local product markets in the EU—with hypothetical shares of 40 % and 60 %, the Index is $40^2 + 60^2 = 5\ 200$.

In the context of CRAs, the number of ratings (rather than the value) is used to proxy market share, due to changes in the nominal value outstanding over time for some instruments such as structured finance issuances and

also to allow issuer ratings to be considered alongside instrument ratings. More specifically, the relative concentration of the market for issuer and instrument ratings is calculated by counting the number of entity and issuer ratings provided by the CRA in that time window, and dividing that number by the number of ratings provided in the market overall in that same time window. This creates the inputs that are fed into the HHI formula.

[182] With respect to ratings, competition could also be analysed in terms of quality of credit ratings (such as accuracy with respect to default risk probabilities).

[183] DG COMP: Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, Official Journal C 031, 05/02/2004 P. 0005 – 0018.

[184] The US Department of Justice (DoJ) has also published similar guidelines: Horizontal Merger Guidelines (Issued 19 August 2010), section 5.3. The DoJ considers a market with an HHI that is between 1 500 and 2 500 points to be "moderately concentrated", while an HHI that is above 2 500 points is considered to be "highly concentrated". See also https://www.justice.gov/atr/herfindahl-hirschman-index

CRA, then scenario 1 replaces "consider" with "shall" hire a small CRA. Scenario 2 extends Scenario 1 by widening the scope of Article 8d to cover all instruments. As discussed above, these scenarios are illustrations to explore possible ways in which one of the aims of the CRAR (a European market that is no longer "*dominated by three credit rating agencies*") might be achieved. Many other scenarios beyond revisions to Article 8d could be explored as well.

Chart RA.32 below presents the evolution of the HHI for each of the simulations. Each variation displays the range (shaded area) in HHI for the local markets examined, with the average HHI for that variation displayed by the solid line within the shaded area. In other words, the HHI is calculated for each of the 140 local (i.e. within-country and product-specific) markets, for both the baseline and two alternative policy scenarios, at each time window. The chart contains several interesting results:

— The extent of actual (i.e. outturn) concentration in European CRA rating markets, measured by the HHI, and shown by the blue area and line, has stood at 3 707 points as at mid-2021, and had a long-term average HHI of 3 815 points, with local markets tending to range anywhere from 2 323 and 7 350 points in the past six years. These figures are generally above the "highly concentrated" threshold of 2 500 points— shown in the chart by the dashed black line.

— The actual situation (shaded blue area and line in Chart RA.32) also demonstrates that this situation has not evolved since the introduction of the CRAR. In other words, Article 8d, in its present form, does not seem to have led to a different situation from the time of the CRAR's recital 11, i.e. "*a market*

that is dominated by three credit rating agencies".

— The orange shaded area and line in Chart RA.32 below displays the range in industry concentration for local rating markets in the EU under an adjusted Article 8d. The orange area and line are dramatically lower than the baseline situation (i.e. blue area and line). The orange area demonstrates that, if Article 8d were adjusted in line with scenario 1 (an issuer appointing two CRAs is required to appoint at least one small CRA), CRA industry concentration in the EU would steadily fall, reaching an average HHI across local markets 2 231 points by mid-2021, i.e. nearly 1 400 points lower than the actual situation at the same date and below the "highly concentrated" threshold of 2 500 points. This would constitute an average reduction in market concentration levels (relative to the baseline scenario) of 40 % by mid-2021.

— If Article 8d were adjusted in line with the more ambitious scenario 2 (all instruments must carry at least two ratings, of which at least one must come from a small CRA), then the degree of concentration in the EU market for CRA rating services would fall further, to an average HHI across local rating markets of 1 586 points by mid-2021. Although lower than the HHI under scenario 1, the reduction here is by a comparatively smaller amount (relative to scenario 1) than the reduction achieved when moving from the baseline to scenario 1 (see previous bullet). The evolution in the HHI under scenario 2 is shown in the green shaded area and line in Chart RA.32 below. This would constitute an average reduction in market concentration (relative to the baseline scenario) of 56 % across local rating markets in the EU by mid-2021.

RA.32
Actual and simulated concentration in the European CRAs market
Alternative versions of Article 8d could dramatically reduce concentration in the EU market for credit ratings
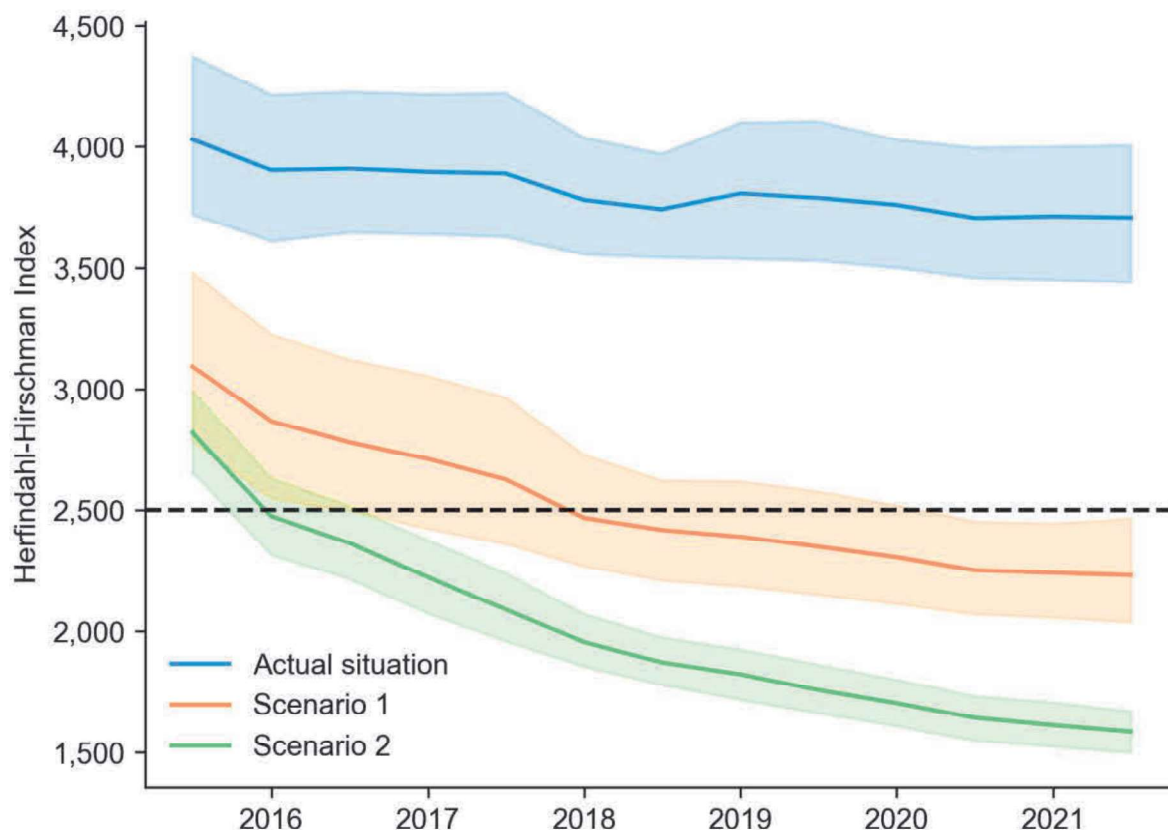
Note: Each shaded area and line illustrates the range (95 per cent confidence interval) and average in the local market Herfindahl-Hirschman Index (HHI) under each snapshot date, for the baseline (Actual Situation), and two scenarios. Scenario 1 is summarised as "If hiring two CRAs, must use one small CRA" and Scenario 2 is summarised as "Must always hire two CRAs, of which one must be a small CRA". Six-monthly snapshot dates are used, starting from 2015H2, i.e. including instruments and issuers newly rated between the start and middle of 2015, as well as outstanding as at mid-2015, less any instruments and issuers whose ratings were withdrawn or suspended, as well as less any instruments that matured in this period. The same rationale applies to subsequent six-monthly snapshot dates, i.e. 2016H1, 2016H2, etc. The HHI measures the extent of concentration among Credit Rating Agencies in the market for providing solicited ratings on instruments and issuers for the specific product type defined in the European Rating Platform (Corporate, Financial, Insurer, Sovereign, and Structured Finance), within each EU country. The HHI is equal to the sum of the squared market share of each CRA active in each time window. Market share is measured in terms of total rated instruments and rated issuers relative to all rated instruments and rated issuers within each industry identified by ESMA's market share calculations (sovereign, corporate: financial institution + insurance + other corporate, and structured finance). The black horizontal dashed line denotes the generally accepted range for a "highly concentrated" market. Markets with fewer than 20 ratings at a given time interval have been excluded from the visualisation.
Sources: ERP, FIRDS, GLEIF, Refinitiv, ESMA.

It is again emphasized that these results do not necessarily call for adjustments to Article 8d. Rather, the purpose is to illustrate how alternative formulations might meet a specific aim set out in the CRAR.[185] Moreover, like all simulations, further enrichments could be explored to capture more aspects of how CRAs operate in practice and, consequently, how much and how quickly credit rating markets in the EU would react to

alternative Article 8d formulations. Such enrichments could include reflecting the necessary lead time for CRAs to make the required investments in IT and resources prior to significantly expanding their operations. This would ensure that any so-called "teething problems", as occasionally identified in the past with new CRA entrants in a local market, are captured in the simulations (see COM, 2016).

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[185] Concerns are sometimes raised that an increase in competition among CRAs would lead to so-called "ratings shopping" or "ratings inflation". In the event that these developments were to occur, they could be mitigated by appropriate supervision, including the regular re-mapping of ratings to standardised credit quality steps. See Bae et al. (2015), COM (2016), and EBA (2021).

Conclusions

In Europe, despite the large number of registered Credit Rating Agencies (CRAs), the three largest CRAs have for years controlled more than 90 % of the market. Ten years ago, EU legislators sought to reduce this imbalance by supporting the use of small CRAs in Europe. This article has attempted to take stock of the situation since then, using a unique dataset containing the entire timeline, since the CRA Regulation reporting requirements entered into force in mid-2015, of rating actions on EUR 20 tn worth of EU financial products and more than 6 000 issuer ratings.

The article identified cases where multiple ratings have been solicited for instruments and/or issuer ratings, with no small CRA being among the solicited CRAs (i.e. only large CRAs have been contracted). As set out in Article 8d of the CRA Regulation (CRAR), such a situation requires that this fact be documented by issuers for the instrument and/or issuer or related third party in question. According to the CRAR, the supervision and enforcement of Article 8d (i.e. the documentation requirement) is under the purview of Sectoral Competent Authorities (SCAs) at the national level. The SupTech-related techniques set out in this article can help support SCAs' efforts to identify, for example, the issuers with the most instruments that would need to be documented, and thus supports the efficient use of resources within the European System of Financial Supervision.

In addition, using network analysis techniques, it is clear that the landscape for small CRAs seeking to grow is a challenging one. Small CRAs are used almost exclusively on the 'periphery' of the industry, and are locked out of the larger 'core' market consisting of issuers that seek more than one rating for their products or themselves. This larger market is shared almost exclusively among the large CRAs, and the associated market-wide Herfindahl-Hirschman Index levels indicate that these markets are "highly concentrated", using generally accepted benchmarks. In turn, a reduction in market concentration is likely to lead to greater choice of rating services at competitive prices.

Lastly, the evolution in local market concentration over six-monthly periods is examined, and a simulation exercise for alternative legislative rules destined to boost competition in the market is conducted. The aim is not to recommend a particular course of legislative action, but instead to illustrate how quantitative techniques can support policymakers in achieving their objectives. The simulation exercise suggests that strengthening legislative requirements to make use of small CRAs when seeking an additional rating for a product or issuer is associated with an average reduction in EU CRA market concentration of roughly 40 to 55 %. In turn, the resulting industry concentration figures suggest that EU credit rating markets would no longer be "highly concentrated" from a competition perspective.

Looking ahead, further research could be conducted to support the simulation exercise, for example reflecting additional realities faced by small CRAs that seek to grow their business, such as lead times to make the necessary investments in IT and resources. Other definitions of small CRAs could also be explored and analysed, such as those set out by the European System of Central Banks. Lastly, additional structural aspects that impact EU credit rating market dynamics could be considered, to go beyond the "all else being equal" approach set out in the present article.

Annex: steps performed for Article 8d simulation

The simulations proceed as follows, taking the "*Scenario 1: If hiring two CRAs, must use one small CRA*" scenario described above:

— We consider all of the ratings outstanding, by CRAs registered and supervised by ESMA, in the country in question, for the product type in question (issuer/instrument ratings), and for the given snapshot date.

— For that snapshot date and local market, take all of the instruments and issuers that are rated in that time window by at least two CRAs, but with no small CRAs involved (i.e. those instruments and issuers that would need to "document" their departure from the small CRA usage under Article 8d). Keep all of the other instruments and issuers in this time window (i.e. those rated by only one CRA plus those rated by at least two CRAs but with one or more small CRAs involved) as well, to merge back in later on in the simulation.

— Second, for each instrument and issuer in this group, allocate a small CRA to rate that instrument and issuer. This allocation is performed randomly, using the relative market share (among small CRAs) in the previous six-month time window as probabilities for the

rating to be allocated to one of the small CRAs. Thus if in the previous time window small CRA 1 had a market share of 20 % and small CRA 2 had a market share of 10 %, then there is a 20 % chance that small CRA 1 is allocated to rate this instrument/issuer and a 10 % chance that small CRA 2 is allocated to rate this instrument/issuer.

— This aims to replicate what is likely to happen in reality (and has been observed in past market studies, such as the above ESMA Technical Advice to the Commission): the market shares of CRAs influence their ability to gain new ratings. Where a small CRA is not available in a local market (e.g. because all of the CRAs active in that local market are deemed to be large CRAs, as is often the case with Sovereign ratings for example), then CRAs that are deemed to be "small CRAs" (market share at 10 % or below) at the EU level for that product are considered.

— Note also that in subsequent time windows the allocation of small CRAs in the past is kept constant—i.e. if a small CRA has been allocated to rate instrument XYZ in the previous time window, then in the current time window that allocation stays the same.

— Third, at the same time, it is assumed that an issuer will not pay for its instrument or entity rating to be rated by an extra CRA. Therefore, having added a small CRA to rate the issuer or its instrument in the previous step, the issuer will also proceed to stop its contract with one of the two or more existing (large) CRAs that are rating the issuer or its instrument. The removal is also done based on probabilities, using the same approach as described in the previous bullet (i.e. the greater market share of the large CRA relative to the two or more large CRAs rating the product, the greater likelihood that that large CRA is removed).

— Fourth, once this reshuffling has been done, this group of instruments and issuer ratings is added to the rest of the universe of

instruments and issuer ratings (which did not need to be reallocated, according to this version of Article 8d being simulated). This then constitutes the full universe of rated instruments and issuers, and the Herfindahl-Hirschman Index is calculated for this universe.

— The resulting market shares for each CRA at the level of the local market (i.e. within a given country, for a specific product) are recalculated based on this new information. Note that this can lead to some CRAs being 'downgraded' in size from "large" to "small" and others being 'upgraded' from "small" to "large" in a given snapshot, which subsequently influences their probability of allocation in subsequent snapshots.

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