AIFS0027

Written evidence submitted by Dr Daniel Cash

The Adoption of Artificial Intelligence Technologies within the leading Credit Rating Agencies

The Credit Rating Research Initiative

<u>Summary</u>

The leading credit rating agencies (CRAs) – S&P Global, Moody's, and Fitch Ratings – are all embarking on injecting Artificial Intelligence (AI) technologies into their rating processes and client offerings to varying degrees. These AI technologies present opportunities for increased efficiencies and bespoke product offerings for market participants. However, there are innate conflicts of interests and areas of opacity within the CRAs' processes that make this adoption of technology that can remove human oversight structurally dangerous to the United Kingdom and the global financial marketplace. This submission utilises a newly published book, the first of its kind, that analyses the CRAs adoption of AI technologies from a legal and regulatory perspective. The book can be made available to the Committee upon request.

<u>How the CRAs are adopting AI Technologies</u>

The application of technology and study to ascertain credit risk is important both for CRAs and for investors. Investors, and specifically 'institutional' or 'sophisticated' investors have for a long time been focused on assessing credit risk, for obvious reasons.[1] To do that, investors utilised early mathematical models that would aid them with determining rates of failure within corporations (like, for example, Beaver's study in 1966 which utilised a univariate approach to understand financial ratios).[2] This study was advanced by the Edward Altman's application of a multivariate approach to the same problem.[3] These statistical techniques allowed for the *classification* of variables that would effect rates of failure, essentially. This analytical foundation became the starting point for the application of Artificial Technologies once computational processes offered such advancement. Early AI approaches included techniques such as 'Artificial Neural Networks' (ANNs) for example, which mimic the brain's infrastructure and constitutes a layer of 'nodes' (like the brain's neurons) with each node performing simple calculations and passing the results onto further nodes.[4] Eventually, the system learns trends and patterns through 'training'. Research has concluded that investors will likely find the most use when trying to ascertain credit risk by applying 'decision trees' which describe a flow chart-like system which poses a series of questions, and the answers dictate the flow of the information.[5] Yet, research has shown that while AI is improving the investors' ability to a. better

AIFS0027

understand credit risk and b. better predict the ratings of the CRAs (which can reduce costs and improve efficiency), no particular AI model has been able to fully predict either objective. This may be for a variety of reasons, including the fact that CRAs adopt a mixed methodological approach, which includes significant amounts of subjective (qualitative) judgment which is difficult to predict.

That is one component to the issue of how credit ratings are being impacted by AI technologies. The other is how the CRAs themselves are adopting the technologies. The CRAs are structurally important (as Box 1 describes below) and, for these reasons, the incorporation of technologies which may reduce human interaction is of concern. The main issue for regulators, legislators, governmental bodies, and onlookers is that the adoption of AI technologies by CRAs and regulatory frameworks' understanding of that adoption is so new, there is very little to go on. What we can see so far can be split into two categories: how the CRAs are deploying AI within their methodological processes, and then how the CRAs are deploying AI for their consumer base by way of innovative AI-supported 'tools'.

BOX 1 – The Structural Role of the CRAs: The Signallers

The modern CRAs can trace their lineage back nearly 200 years. Their utility for the marketplace has not been consistent during that time, but the modern iterations of the CRAs record revenues in the billions. The CRAs exist to provide opinions on the creditworthiness of a borrower and, as such, serve a systemically critical role. Creditors cannot know certain aspects of the debtor for various reasons – confidentiality, competition, economies of scale – and this is called 'informational asymmetry'. CRAs exist to bridge that gap. Their utility lies in two components of their offering: that they are theoretically *independent* and that they are theoretically a *third-party* to the relationship between debtor and creditor. It is for this reason that no legislator or regulator has chosen to determine how a CRA may conduct its credit risk analysis.

AIFS0027

There is a second reason that the CRAs are structurally important. Most of the investment in the modern era is conducted via 'institutional investors', institutions that exist to invest the collected pool of resources given to it, by way of pensions or individual investments, for example. This dominant model is centred upon the so-called 'agent/principal' relationship: the investment management team is the 'agent', the body is asset holders is the 'principal'. This relationship contains many varying power imbalances. To resolve those power imbalances – like the agent acting in the principals' interest, or the agent needing to communicate their decision-making processes around risk with the principal – there is the need for an effective signalling mechanism that all parties can use. In relation to risk, that signalling mechanism is the ratings of the leading CRAs. When Signalling Theory is applied to this relationship, it is suggested that the simplicity of the sliding rating scale employed by the CRAs, when taken in conjunction with their theoretically independent third-party position, is the language that all the parties actively use. Agents are often constrained by their principal (and regulators) to only invest in 'investment-grade' debt, whilst the largest institutional investors are often constrained to only invest in AAA-rated debt, owing to their structural importance. Agents will often communicate with their principal using the credit rating scale to signal the risk-averseness of their decision-making process.

With respect to the development of tools for their users, both leading CRAs – S&P Global and Moody's – have developed similar products. S&P Global's tool is called S&P Capital IQ Pro, and Moody's is known as Research Assistant. These tools allow registered users to utilise AI to collate, categorise, summarise, and evaluate millions of documents that each CRA has at its disposal. Users can then create credit risk memos, bespoke reports, or compare various ratings and issuers seamlessly. Both agencies have indicated that the toolkits have had significant effects for their users, resulting in reduced task time, increased readership, and so on.[6]

However, in terms of how the CRAs are incorporating AI technologies into their methodological processes, information on that front has so far been lacking. Moody's President Michael West did remark that he sees Generative AI as 'an enabler to human judgment in the rating process',[7] although Moody's CEO quickly followed this with the confirmation that Moody's 'will be deliberate and transparent in the rating agency in terms of how we leverage generative AI [and that] we are in dialogue with our regulators to make sure they understand how we're doing that'. To inject AI into the processes, Moody's trialled 'GitHub Co-Pilot' which served as a companion to coders; Moody's

AIFS0027

Analytics' Head of GenAI equated the Pilot to a mobile phone's 'autocomplete' function.[8] The trial was so successful that Moody's have built their own version of the tool called 'Moody's CoPilot' which advances the objective but allows even non-coders to now utilise the tool for all of their particular purposes. For S&P Global, their Chief Digital Solutions Officer recently remarked that 'we are entering AI 2.0' and that their AI and Innovation Hub is actively harnessing machine learning and Natural Language Processing (NLP) to transform mountains of unstructured data. This has led S&P Global to create 'Spark Assist' which all of their 40,000 employees now have access to, and which allows users to create 'prompts' which can do things like query databases, pull information from particular sources, and more.[9]

Both CRAs are actively careering towards the final of four stages of AI, as Moody's believes.[10] The four stages – 1. Rudimentary RAG frameworks (Retrieval-Augmented Generation, like chatbots) 2. Advanced RAG 3. Augmented Intelligence, and finally 4. Autonomous Intelligence – conclude with the development of 'autonomous agents'. These agents 'can develop information in an iterative manner'. One objective, according to Moody's, would be to have several of these autonomous agents interacting with each other, each with different specialisms. The report says 'we could have a credit risk specialist agent, an environmental, social, and governance agent, a news analyser, and several business analysts' with which a team of coders could create software on demand to fetch information and generate insights. Moody's confirmed that they are currently at the stage of deploying a multi-agent framework and that they have seen 'fundamental improvements in the technology that could lead us to build enterprise-grade production applications'. To help them do this, Moody's are actively deploying tools from the field, including Microsoft's Autogen, and CrewAI.

<u>The Risks of AI Technology Adoption by CRAs</u>

Yet, it is not all plain sailing. Moody's themselves have acknowledged that 'for more extensive cases in production, agents need to be tamed and their abilities constrained, in order to avoid hallucinations and to maintain alignment with user requirements'.[11] To do this, the CRA is deploying AI 'judges' – utilising systems like Google's Cappy – which involves deploying Large Language Modelling systems (LLMs) to evaluate a given model against set criteria. Moody's continues by affirming that 'as we advance through the stages of GenAI maturity, it is crucial to comprehensively address AI safety. It is paramount that AI systems operate reliably and ethically. This involves implementing robust safety protocols, continuous monitoring, and rigorous testing to prevent unintended consequences'.[12]

AIFS0027

These developments constitute technological risks that are growing within the CRAs. The most pertinent of those risks can be found in the intersection of the CRAs' *culture* are the *potential* for misunderstanding underlying data that is seemingly inherent in the application of AI technologies as the CRAs are deploying them. At the core of the CRAs' involvement in the Global Financial Crisis was the CRAs' misunderstanding of the underlying data relating to Residential Mortgage-Backed Securities.[13] Whilst the same circumstances may not be present today, the principles are comparable enough to warrant significant attention. Now, there is almost no attention being paid to this intersection. This is even more significant when we understand that the Big Two CRAs specifically are purchasing various market players within the world of AI to bolster their capabilities. In 2018 Moody's purchased QuantCube,[14] and more recently in 2025 they purchased CAPE Analytics.[15] This came just days after S&P Global purchased ProntoNLP.[16] There is no indication that these acquisitions will be the last that the Big Two CRAs make in relation to AI Technologies.

Potential Pathways Forward for the United Kingdom

The regulatory landscape for the CRAs' adoption of AI Technologies is at a particularly nascent stage. In the US there has been almost nothing said officially. In the EU, ESMA has asked market participants 'do you see merit in requesting a disclosure of the use of technological innovations such as Artificial Intelligence in the rating process?'[17] Many of the respondents were particularly scathing of ESMA for not asking such an important question in a more structured or serious manner, but for the most part respondents were of the view that whilst increased transparency could be useful for the market, legislative change would be premature and inappropriate at this stage. These responses fall in line with the dominant regulatory approach for such technological usage, which is called 'Co-Regulation'. This approach, essentially, describes when privately agreed standards and norms are given authority by the State. The benefits of this approach include very appropriate rules and norms in theory, as well as increased buy-in from market participants, again in theory. The drawbacks however include an inability to set the regulatory course for the benefit of the market and society, whilst simultaneously allowing the regulated to influence the regulatory processes which is supposed to be structurally focused in nature.

The UK House of Lords, in 2024, produced a report that put forward the suggestion that UK needs to 'forge its own path on AI regulation, balancing rather than copying the EU, US, or Chinese approaches. In doing so the UK can strengthen its position in technology diplomacy and set an

AIFS0027

example to other countries facing similar decisions and challenges'.[18] This submission agrees with this sentiment. However, this submission also warns against this sentiment being deployed in the wrong manner. Charting one's own path in this sector does not necessarily equate to 'hands-off' regulation. There are significant benefits to the UK purposively presiding over the safe adoption of AI technologies within the credit rating sector. The UK can propel itself to the forefront of novel and appropriate regulation that is dynamic but responsible in nature. To do that, the UK ought to consider:

1. Conducting purposeful examinations of the adoption of AI technologies by CRAs, including public requests for evidence, and surveys conducted by the FCA.
2. Hosting opportunities for Civil Society and Market Participants to collaborate with CRAs on what good governance for AI technologies could look like from the CRAs' perspective.
3. Pursuing an early Code of Conduct that CRAs could develop alongside the FCA, as their primary regulator in the UK.

These recommendations ae provided to ensure that the UK and its governing bodies are not caught out later down the line and forced into a reactive stance. Collaborating and partnering with the CRAs and market participants at this nascent stage of development could not only save the UK vast resources that any AI/CRA related crisis may illicit, but instead put the UK at the forefront of the development of this next frontier in the story of the structurally critical Credit Rating Agencies.

Further analysis and information on this subject can be found within:

Daniel Cash and Nataliya Tkachenko, *The Risk of Artificial Intelligence in Credit Ratings – Exploring the Efficiency, Development and Impact* (Springer 2025).

March 2025

AIFS0027

[1] Alvin J Surkan and J. Clay Singleton, 'Neural networks for bond rating improved by multiple hidden layers' (1990) Proceedings of the IEEE International Conference on Neural Networks 157–162; Soumitra Dutta and Shashi Shekhar, 'Bond rating: a nonconservative application of neural network' (1988) IEEE International Conference on Neural Networks 443–450.

[2] William H Beaver, 'Financial Ratios as Predictors of Failure' (1966) 4 Journal of Accounting Research 71-111.

[3] Edward I Altman, 'Financial rations, discriminant analysis and the prediction of corporate bankruptcy' (1968) 23 The Journal of Finance 4 589.

[4] Herbert L Jensen, 'Using Neural Networks for Credit Scoring' (1992) 18 Managerial Finance 6 15.

[5] Carl Kingsford and Steven L Salzburg, 'What are decision trees?' (2008) 26 Nature Biotechnology 1011.

[6] Moody's, *Moody's Gen-AI-powered Research Assistant drives significant efficiency gains for financial services industry* (2025) https://www.moodys.com/web/en/us/site-assets/genai-research-assistant-financial-services.pdf.

[7] Valentin Dimitrov, Darius Palia, and Leo Tang, 'Impact of the Dodd-Frank Act on credit ratings' (2015) 115 Journal of Financial Economics 3 507.

[8] Sergio Gago Huerta, 'Moody's Coders Find Benefit in Using Generative AI' (2024) Enterprise Security https://network-security.enterprisesecuritymag.com/cxoinsight/moody-s-coders-find-benefit-in-using-generative-ai-nid-3725-cid-13.html.

[9] Asheem Chandna, 'Gen AI Present and Future: A Conversation with Swamy Kocherlakota, EVP and Chief Digital Solutions Officer at S&P Global' (2025) Greylock (19 Feb) https://greylock.com/greymatter/gen-ai-present-and-future-a-conversation-with-swamy-kocherlakota-evp-and-chief-digital-solutions-officer-at-sp-global/.

[10] Moody's, *GenAI's transformative potential in the financial sector: the evolution of agents* (2024) https://www.moodys.com/web/en/us/insights/resources/the-rise-of-ai-agents.pdf.

[11] Moody's, *GenAI's transformative potential in the financial sector: the evolution of agents* (2024) https://www.moodys.com/web/en/us/insights/resources/the-rise-of-ai-agents.pdf.

[12] Seungone Kim, Juyoung Suk, Shayne Longpre, Bill Y. Lin, Jamin Shin, Sean Welleck, Graham Neubig, Moontae Lee, Kyungjae Lee, and Minjoon Seo, 'Prometheus 2: An Open Source Language Model Specialised in Evaluating other Language Models' (2024) Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing 4334-4353 https://aclanthology.org/2024.emnlp-main.248.pdf.

[13] United States Senate Permanent Subcommittee on Investigations, Committee on Homeland Security and Governmental Affairs, *Wall Street and the Financial Crisis: Anatomy of a Financial Collapse* (2011) https://www.hsgac.senate.gov/wp-content/uploads/imo/media/doc/PSI%20REPORT%20-%20Wall%20Street%20&%20the%20Financial%20Crisis-Anatomy%20of%20a%20Financial%20Collapse%20(FINAL%205-10-11).pdf.

[14] Moody's, 'Moody's announces investment in QuantCube, AI-based Predictive Analytics Firm' (2018) Moody's (May 29) https://ir.moodys.com/press-releases/news-details/2018/Moodys-Announces-Investment-in-QuantCube-AI-Based-Predictive-Analytics-Firm/default.aspx.

[15] Moody's, 'Moody's to acquire CAPE Analytics, adding AI-powered Geospatial Property Risk Intelligence to its Industry-leading Insurance Risk Models' (2025) https://ir.moodys.com/press-releases/news-details/2025/Moodys-to-Acquire-CAPE-Analytics-Adding-AI-Powered-Geospatial-Property-Risk-Intelligence-to-Its-Industry-Leading-Insurance-Risk-Models/default.aspx.

[16] S&P, 'S&P Global acquires ProntoNLP, expanding its Generative AI-powered product portfolio' (2025) https://press.spglobal.com/2025-01-06-S-P-Global-Acquires-ProntoNLP,-Expanding-its-Generative-AI-Powered-Product-Portfolio.

[17] ESMA, *Consultation Paper: Proposed Revisions to Commission Delegated Regulation (EU) 447/2012 and Annex I of CRA Regulation* (2024) https://www.esma.europa.eu/sites/default/files/2024-04/ESMA84-2037069784-2112_Consultation_Paper_on_Changes_to_Delegated_Reg_447-2012_and_Annex_I_of_CRAR.pdf.

[18] House of Lords, *Large Language Models and Generative AI* (2024) https://publications.parliament.uk/pa/ld5804/ldselect/ldcomm/54/54.pdf.