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Why should a central bank take an interest in artificial intelligence? The example of the Banque de France

Artificial intelligence (AI) has become a key issue for central banks, both because of its impact on the economy and because of the opportunities it offers in the performance of their missions.

Indeed, central banks did not wait for the recent boom in generative AI – notably ChatGPT, Gemini, Mistral, Claude and DeepSeek – to begin experimenting with solutions based on big data, data science and AI. They monitor technological developments and embrace AI to leverage it to the full across their various business areas and manage the associated risks.

Drawing on examples from the Banque de France and the *Autorité de contrôle prudentiel et de résolution* (ACPR – Prudential Supervision and Resolution Authority), this article shows how AI has become a strategic driver of transformation for central banks and financial supervision, both in Europe and the rest of the world.

Jérôme Coffinet, Jean-Brieux Delbos
Data and Analytical Services Directorate

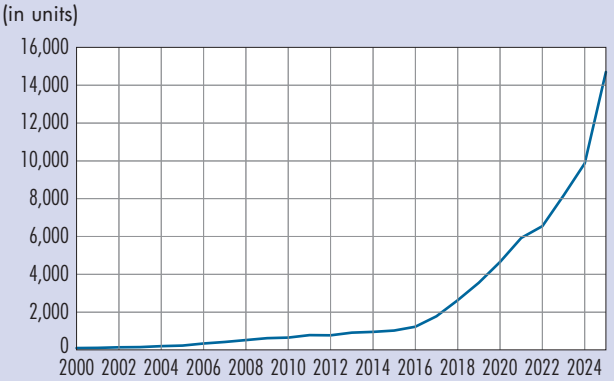
JEL Codes
E58, G28,
O32, O33, O38

Over 60
experiments with artificial intelligence and data science that have been carried out by the Banque de France since 2015

including 9
leading to applications in its divisions as of 2025

5
complementary priority use cases developed and rolled out in 2025 and early 2026 as part of the Banque de France's strategic plan

Number of articles containing the keywords "artificial intelligence" and "central bank(s)" or "central banking"
2000-25 period



Source: Google Scholar, worldwide, April 2026.
Note: Number of articles containing both keywords.

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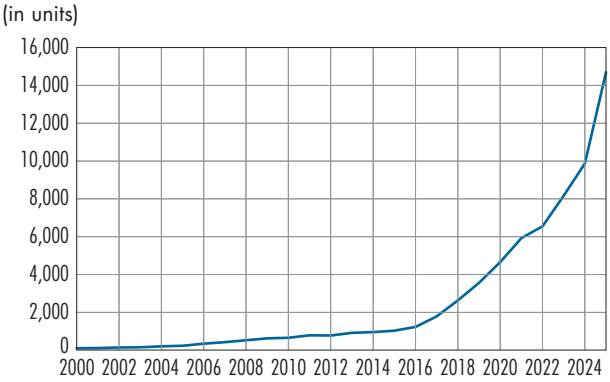
1 Central banks are embracing artificial intelligence

Combined with the massive volumes of data required to train models, artificial intelligence (AI)[1] constitutes a disruptive innovation with considerable potential. It has become a powerful driver of innovation, both for central banks' internal processes and for transforming their ecosystem. Alongside analytical models designed for specific tasks, there are now generative AI algorithms capable of mimicking human reasoning. Thanks to large language models (LLMs), a query phrased in natural language rapidly elicits an automated response. Their development since 2022 has facilitated human-machine interaction.

The rise of AI has fascinated the public, with the emergence of generative AI tools such as ChatGPT in late 2022, followed notably by Gemini, Mistral, Claude and DeepSeek in 2023. A global survey (Singla et al., 2025) reports rapid take-up: in July 2024, 71% of companies were using generative AI in at least one business function, compared with 33% in 2023. An internal survey conducted by the Banque de France in 2025 concluded that 45% of respondents were using AI assistants less than a year after their launch.

Central banks had already started to explore the fields of big data, data science and AI long before the rise of generative AI. They drew on machine learning[2] and deep learning (deep neural networks), classification and natural language processing (NLP). Between 2000 and 2025, the increase in the number of articles indexed by Google Scholar reflects the growth in academic research into AI related to central banks (see chart).

Number of articles containing the keywords "artificial intelligence" and "central bank(s)" or "central banking"
2000-25 period



Source: Google Scholar, worldwide, April 2026.
Note: Number of articles containing both keywords.

Generative AI has vast potential: Korinek (2023) identifies more than 25 use cases for economists (ideation, modelling, agent-based simulation, generation of fictitious data, etc.), most of which can be applied to other professions.

According to surveys by the Bank for International Settlements (BIS; Araujo et al., 2025), central banks are currently focusing their use of AI on high value-added areas: chatbots, document drafting and summary, code generation, economic research, and statistical production. In the medium term, the greatest benefits are expected in cybersecurity (enhanced threat detection and risk monitoring), as well as in data analysis, forecasting and process automation (see Box 1). AI offers a means of boosting productivity and automating repetitive tasks. More broadly, it is seen as a tool for transforming and accelerating data use, as well as enhancing decision-making and operational efficiency.

1 Artificial intelligence (AI) refers to systems capable of simulating human cognitive functions, such as learning, reasoning and decision-making. It relies on algorithms and data to detect patterns, predict behaviour or generate content (see Sargent, 2025).

2 Consists in building a model from a training dataset. The model is then used to make predictions.

BOX 1

The first applications of AI at the Banque de France

At the Banque de France, experiments with artificial intelligence (AI) began as early as 2015, totalling around 60. **From 2021 onwards, several solutions have been in use**, notably to:

- **detect reporting anomalies**, as part of banking supervision (2021);
- **detect unusual transactions**, as part of the fight against money laundering and terrorist financing (AML/CFT, 2022);
- **extract text from scanned PDF documents** (optical character recognition, or OCR, 2022);
- **assess the risk of corporate default** (2023);
- **identify suspected cases of bank fraud** (2023);
- **analyse inflation perceptions and expectations** from press articles (2023);
- **transcribe speech-to-text** (2023);
- to assist economic analysts and decision-makers in **comparing specific territories and communities** (2024).

2 AI is a key driver of transformation for central banks

AI speeds up data collection and processing

For central banks, data collection, processing, modelling and analysis are essential but highly time-consuming activities. AI, combined with high computing power, speeds up the processing of massive volumes of data. This relieves analysts of repetitive tasks (reporting, quality control) so they can focus on higher value-added activities. AI assistants are capable of generating computer code for processing tasks, and generative AI opens up new possibilities for using metadata. When it comes to agentic AI,[3] the Banque de France favours "efficient, positive and unbiased" human-machine interaction (Villeroy de Galhau, 2024).

AI improves data quality, particularly through anomaly detection. The Banque de France, for example, uses it in its statistical imputation methods (treatment of missing values in datasets) for European household surveys and corporate carbon emissions. AI also facilitates database reconciliation using a technique known as "fuzzy matching",[4] as in the case of consolidating company data. In this respect, an experiment carried out in 2026 aimed to analyse the structure of groups.

Lastly, AI enables the generation of synthetic[5] or anonymised data to train models and protect sensitive data. In this way, it enhances statistical output (Naudon, 2025).

3 An artificial intelligence system with a high degree of autonomy, capable of planning, making decisions, executing and optimising actions to achieve complex objectives, while interacting with its environment, without requiring continuous human supervision.

4 A technique for comparing the form of two character strings that are not strictly identical, by identifying their equivalences or similarities, particularly in terms of spelling. A score measures the distance between the two chains.

5 Data generated artificially to augment or replace an existing dataset. They retain their statistical properties without exactly replicating the actual observations, thereby minimising the risk of disclosing sensitive information.

AI helps to enhance economic analysis

There are two main uses of AI: economic forecasting and textual analysis.

Machine learning, when applied to large datasets of statistical series, complements traditional forecasting models. It improves accuracy through its "agnostic" approach (i.e. without any preconceptions about the models used), using the complex relationships between the variables in the model. These techniques, which still need to be refined, have great potential for the missions of central banks.

Textual analysis uses qualitative data to assess the expression of sentiment or uncertainty, characterise governors' speeches (whether they take a "hawkish" or "dovish" stance[6]) and examine content in social and mainstream media. Accordingly, the Banque de France has developed economic uncertainty indicators, a sentiment assessment tool (positive/negative, hawkish/dovish), an indicator of the complexity of speeches, and indices of inflation perceptions in the press. These indicators supplement the expectations derived from surveys or from the markets. Generative AI is now expanding the scope for analysing and optimising communication on monetary policy.

AI supports financial stability and supervisory activities

Financial institutions make extensive use of generative AI across their entire value chain. It enhances the customer experience through personalised agents, optimises internal processes (automated document analysis, algorithmic trading) and strengthens risk management (creditworthiness assessment, volatility estimation, insurance pricing). It is also used in the fight against money laundering and the financing of terrorism (AML/CFT) to identify suspicious transactions.

In light of these developments, central banks and supervisory authorities must understand the economic drivers and risks associated with the use of AI in order to regulate it. If appropriately designed, AI can strengthen financial stability. In this regard, SupTech (supervisory technology) tools use granular datasets (i.e. offering the highest level of detail) to compare indicators, detect warning signs of a crisis or carry out stress tests on the financial system. At the Banque de France, algorithms are already being used to detect fraud. Furthermore, NLP facilitates the analysis of regulatory documents by the *Autorité de contrôle prudentiel et de résolution* (ACPR – Prudential Supervision and Resolution Authority).

AI paves the way for more proactive supervision: real-time monitoring, early detection of anomalies, and automated data collection and processing. In market and payment infrastructures, it promises enhanced detection of suspicious transactions and a reduction in fraud. These approaches, which are still at the exploratory stage, form part of a risk-based approach, particularly with the implementation of the European regulation on AI (AI Act – European Parliament and Council, 2024).

Lastly, central banks can also rely on AI tools to simulate the impact of their regulatory decisions and anticipate how their measures will affect financial behaviour. Regulatory authorities are already using neural networks to refine their assessment of the risk of default by non-financial corporations.

AI helps to improve processes and the service provided

In addition to providing support for specialist expertise, AI enhances central banks' operational capabilities, both internally and regarding the public.

Internally, it offers cross-disciplinary tools, such as assistants for documentary research, and the generation of summaries, presentations or computer code. For example, at the Banque de France, it makes it possible to create SQL queries (i.e. computer language commands sent to a database) from instructions expressed in natural language. AI automates complex processes, thereby enhancing both their efficiency and risk management.

6 Depending on the stated economic priority: combating inflation ("hawk") or supporting growth and employment ("dove") .

In cross-cutting roles, AI optimises human resources management (automation, documentary research, support for recruitment). Legal analysis benefits from RAG[7] techniques, which enrich language models (particularly LLMs) with internal data to generate relevant responses from large corpora.

In information systems, AI unlocks major opportunities: automating repetitive tasks, improving data quality, and optimising processes. Top priority projects include coding assistance, repository improvement, automated unit test generation, and connection tests.

As regards the public, AI facilitates communication (media analysis, audience targeting) and improves the search engines on institutional websites. Chatbots can handle frequently asked questions (such as those relating to overindebtedness and the right to a bank account), whilst complex cases still require human intervention.

AI is an integral part of the Banque de France's transformation strategy

In order to perform their missions to the full, central banks must keep pace with rapid technological developments, master them and learn to capitalise on them. This requires monitoring use cases, risks and threats, as well as the capacity to experiment. At the Banque de France, a strategic action dedicated to AI (see Box 2), launched in mid-2024 and completed before the end of 2025, marked a key milestone following the numerous experiments carried out since 2015. The new strategic plan for 2026-28 focuses on actions to transform business processes and the roll-out of AI for all staff members.

BOX 2

Five new priority use cases for AI at the Banque de France

The Banque de France has included artificial intelligence (AI) in its strategic plan since mid-2024. It rolled out five priority use cases in 2025 and early 2026:

1 **Analytical support for supervisors**: a conversational assistant to answer queries and generate summaries on the credit institutions under review;

2 **Internal support on HR matters**: a chatbot to answer staff enquiries;

3 **Support with assisting private individuals (overindebtedness, the right to a bank account, etc.)**: a chatbot assisting staff to process applications from households;

4 **AML/CFT anomaly detection**: identifying unusual transactions as part of the fight against money laundering and terrorist financing;

5 **Mapping structured financial products** (i.e. those whose return depends on one or more underlying asset): visualisation (categories, positioning, exposures, etc.) and generation of descriptive statistics to facilitate analysis.

Initial user feedback has been very positive, with a time saving of around two hours per week per staff member (Case 1), a correct response rate of over 95% (Case 2) and 90% (Case 3), a significant reduction in automatic false alerts (Case 4) and a high level of analysis reliability, reaching 95% (Case 5).

7 Retrieval-augmented generation: methods based on an AI model that combines information retrieval from a domain-specific document database with text generation to produce more accurate, up-to-date and contextualised responses from relevant sources.

3 To reap the full benefits of AI, central banks must address several major challenges

AI requires standards for compliance, trust and ethics

AI constitutes a major technological advance that elicits both enthusiasm and a degree of caution (see Box 3).

To anticipate risks, businesses and institutions began introducing certification schemes in the early 2020s to promote "responsible" AI. These labels, which are based on self-assessment followed by an audit, aim to minimise bias, enhance explainability, ensure transparency and guarantee human oversight. These labels stem from the work of the High-Level Expert Group on Artificial Intelligence (AI HLEG), set up by the European Commission in 2018. The aim of this group is to advise the Commission on its AI strategy, and to set out ethical guidelines, public policy recommendations and tools for trustworthy AI. In 2023, the Banque de France became the first central bank to be awarded the GEEIS[8] "Inclusive AI" label, and at the end of 2025, signed the Responsible AI Charter drawn up by the *Institut du Numérique Responsable* (INR – French Institute for Responsible Digital Technology).

BOX 3

Vigilance regarding AI

The roll-out of artificial intelligence (AI) requires several levels of vigilance in order to minimise risks and maximise benefits (particularly with regard to bias, see, for example, ACPR, 2026):

- **data quality and freshness**: insufficiently accurate data lead to incorrect results ("garbage in, garbage out");
- **system biases**: preventing this is essential for reliable and non-discriminatory AI;
- **model drift**: the model's performance deteriorates as the data changes, requiring reassessment and retraining;
- **hallucinations and factual errors**: AI can generate fabricated or misleading information, hence the importance of human oversight;
- **explainability**: complex models operate as "black boxes"; transparency, human oversight and justification of decisions made by AI are essential;
- **replicability**: in probabilistic models, responses may vary depending on the context;
- **real-world**: a model that performs well in tests may not work as well in real-world conditions;
- **rare events**: AI struggles to predict these, even with granular data (i.e. data providing the finest level available);
- **amplification**: models that are too homogeneous may reinforce bias, panic behaviour or systemic risks;
- **AI dependency**: AI stimulates creativity, but can also result in homogenisation of ideas and excessive use;
- **environmental costs**: considerable natural and energy resources are consumed in designing, training, deploying and using AI systems;
- **sensitive data**: the risks of confidential information being leaked or disclosed have to be managed.

8 Gender Equality European & International Standard AI.

In 2024, the European Union adopted a pioneering regulatory framework, the AI Act, which came into force on 1 August (European Parliament and Council, 2024), with a staged implementation timetable until 2027 (and as of February 2025 for systems presenting an "unacceptable" risk). The EU has thus adopted the world's first legislative framework for trustworthy AI (Beau, 2024) – see Box 4.

The AI Act entrusts the supervisory authorities with the task of monitoring its implementation. In the French financial sector, this role falls to the *Autorité de contrôle prudentiel et de résolution* (ACPR, 2025), particularly in areas relating to individuals (assessing creditworthiness when granting loans, and insurance pricing). The ACPR is preparing for this by setting up a dedicated working group, which is examining the legal aspects, the auditing of AI systems (in collaboration with industry players) and the national and European coordination.

Internally, the Banque de France established the AI Advisory Group in 2025 to ensure that its use of AI complies with regulations and best practices. Comprising representatives from the fields of data, IT, legal affairs, data protection and ethics, this group has already issued around twenty opinions in one year, covering both new projects and applications already in production.

AI raises issues relating to data privacy and cybersecurity

The rapid growth of AI in the financial sector has meant that central banks and regulators must fully embrace it. Indeed, they have to guarantee financial stability, the security of payments and the protection of sensitive data.

The management of confidential data is a key issue. AI models, particularly generative ones, are vulnerable to model inversion attacks, which can reconstruct sensitive information from generated output. This risk is especially critical given that institutions process granular data containing strategic or personal information about clients, portfolios or financial exposures.

Three technical approaches are being considered to ensure the secure use of AI: proprietary in-house models, third-party cloud-based tools (remote systems accessed via the internet) or hybrid solutions (combining in-house infrastructure with

BOX 4

AI systems by risk class under the AI Act

The European Regulation on Artificial Intelligence (EU 2024/1689), or AI Act, defines **four levels of risk** based on their potential harm to safety and fundamental rights. It also introduces a **specific framework for general-purpose AI models**.

- **AI systems posing an unacceptable risk**: these are banned (social scoring systems and, under certain conditions, biometric identification systems);
- **High-risk AI systems**: these use personal data (particularly health and financial) and therefore raise concerns regarding security and respect for individuals' fundamental rights. They must meet strict requirements (security, transparency, quality, compliance);
- **AI systems subject only to transparency requirement**s: these are systems that generate images, sounds, etc.;
- **Minimal-risk AI systems**: these can be found, for example, in video games and anti-spam filters;
- **General-purpose AI models which may, in certain circumstances, pose a systemic risk**: these mainly comprise foundation models, i.e. machine learning models trained on very large datasets, which make them suitable for a wide range of use cases. These include large language models (LLMs), such as ChatGPT. They are subject to transparency requirements and, in the event of systemic risk, to enhanced assessments (testing, monitoring, incident reporting and, more broadly, cybersecurity).

cloud services, enabling organisations to balance control over sensitive data with technical performance and flexibility of use). Secure, sovereign AI platforms make it possible to process sensitive financial and macroeconomic data without relying on external parties. This ensures confidentiality, availability and compliance, whilst offering advanced analytical capabilities to anticipate systemic risks and strengthen cyber resilience.

Indeed, AI can be a double-edged sword. On the one hand, cybercriminals can use it to expose IT vulnerabilities, automate attacks or produce deepfakes. On the other hand, it can identify suspicious behaviour, detect intrusions and improve the resilience of technical infrastructures, turning it into a key driver of cyber resilience.

Against this backdrop, central banks must deepen their understanding of the capabilities and limitations of AI in order to assess the risks, regulate its use, devise appropriate standards and maintain a balance between innovation and stability.

Collaboration between institutions promotes controlled integration of AI

Central banks and supervisory authorities have every reason to get involved in cooperation so as to share best practices. Such collaboration makes it possible to develop a coherent and replicable operational framework, based on open standards and, where possible, open-source solutions.[9]

Cooperation must also extend beyond central banks to include other national and international authorities, since regulatory boundaries are becoming increasingly blurred by disruptive technologies such as AI. Issues such as competition, cybersecurity, sovereignty, fundamental rights and the green transition are interconnected. A coordinated approach helps to anticipate the interplay of regulations and ensure consistent governance of AI systems globally.

Central banks are already involved in international initiatives such as the workshops organised by the Irving Fisher Committee on Central Bank Statistics (IFC)[10] – designed to promote cooperation, knowledge-sharing and the exchange of best practices – and the projects run by the BIS Innovation Hub. These forums encourage the exchange of ideas and the development of common standards. Cooperation with start-ups and research laboratories is also essential for keeping pace with scientific advances.

In 2024, the ACPR, with the support of the Banque de France Lab, organised a Tech Sprint (SupTech Challenge) focusing on generative AI for supervisory purposes, with a view to exploring its potential. Over the course of three days, the event demonstrated the ability of LLMs to assist with document analysis, anomaly detection and risk management. Such initiatives illustrate the importance of collaborative and experimental approaches to better understanding and regulating the use of AI.

⁂

Therefore, given the transformations and challenges brought about by AI, central banks must maintain public trust, which is so essential. To remain credible, they must thus demonstrate that they have a firm grasp of this technology, both internally, and in their relations with economic players. AI will be integrated gradually and cautiously to ensure stability and security. At the Banque de France, AI is an integral part of the new 2026-28 strategic plan. Consequently, the Banque de France has established a specific organisation to ensure transparent governance of AI, simplify and automate business processes, and make AI accessible to all staff members. AI is a strategic tool for strengthening the organisation's ability to conduct its missions and modernise its operational functioning.

This evolution requires close cooperation between data experts, business users, legal professionals, supervisors, infrastructure and cybersecurity specialists, and the wider ecosystem. Only collective action will ensure the effective, responsible and positive integration of AI.

9 Computer programs whose source code is freely accessible and modifiable, as opposed to proprietary source code.
10 The Irving Fisher Committee on Central Bank Statistics, under the auspices of the Bank for International Settlements (BIS).

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