

Box 2.1

ADVANCED GENERATIVE ARTIFICIAL INTELLIGENCE TRAINING PROGRAMME

In 2025 the Banco de España, in collaboration with the European Commission, conducted an advanced generative artificial intelligence (AI) training programme.¹ Generative AI is designed to create original content (text, images or software code) by drawing on patterns learned from large volumes of existing data. Unlike other AI models that only classify, predict or analyse, generative AI produces new information by combining what it learned when it was trained.

The aim of this programme was to boost innovation across the Banco de España, implementing the recommendations from the 2023 external evaluation of the use of technological innovation in the prudential supervisory function.

The programme's four pillars are detailed below:

Pillar 1. Advanced training: In early 2025 a four-week intensive course was given to over 40 experts from the Banco de España and other national competent authorities. The speakers were top experts who gave theoretical and practical explanations of key concepts such as:

- *Embeddings*: a way of converting text or images into vectors so that the machine understands them.
- *Transformers*: a type of model that enables the AI to consider context.
- *Agent architecture*: systems that combine various AI models so that they work together and resolve more complex tasks

Pillar 2. Development of proof of concept: A generative AI prototype – that is, an initial version of an idea that could become an actual tool in the future – was developed. This

project, conducted alongside the team that provided the training, allowed participants to put the knowledge gained into practice in a case study on audit reports. Two types of tools were compared: proprietary AI (tools created by, and licensed from, vendor companies) and open-source models, which are free of charge and can be tailored to any organisation.

Pillar 3. Collaborative innovation workshop: A two-day innovation workshop was organised with the assistance of the European University Institute. Five teams with members from different countries and fields participated. They collaborated to create prototypes, using state-of-the-art technologies, such as generative AI, network analysis (which maps the relationships between different components as if they were the nodes and threads of a spider's web) and geographic information systems (digital tools that analyse maps and location data). This workshop helped strengthen collaborative ties between different supervisors.

Pillar 4. Strategic meeting with senior management: A meeting was held between Banco de España senior management and international experts to analyse the challenges and opportunities that AI poses for the financial sector and the impact of AI on supervisory functions. Key issues were analysed, including the most disruptive technologies in finance, how to combat disinformation, ethical questions and the creation of innovation ecosystems.

This programme reflects the Banco de España's commitment to innovation, developing its staff's capabilities and collaborating with European institutions.

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