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How can AI change banking and what will this mean for supervision?

Artificial Intelligence and Machine Learning (AI/ML) will fundamentally change the financial sector in the medium term. AI/ML may undermine one of the foundations of banking business: banks' privileged access to their customers' financial and risk information. In that respect, AI is comparable to financial innovation in the nineties: Whereas derivative instruments have made local risk globally tradeable, AI/ML makes banks' specific local information substitutable and therefore globally accessible and processable.

At the same time, AI/ML offers many opportunities to banks as well as to their new competitors: it enables the financial industry to exploit masses of information in order to improve their risk management and decision-making processes. Therefore, banks are encouraged to use AI/ML where this leads to improved service to their clients and better risk management, or, in a word: more effective and efficient banking operations.

However, a lesson from the past is that innovation unfolds its benefits only if its major implications are well understood. By construction, in AI systems there exists a strong nonlinear relationship between their input and output. This, along with tremendously increased computing power, is what makes them successful: a huge amount of data can be processed quickly, and its inherent information extracted. However, this feature also marks the flip side of the coin: it is hard to understand their "reasoning". Morever, the sheer amount of data utilised raises ethical questions about its rightful usage.

The application of AI/ML can create considerable risks for banks as well. It is often difficult to know (i) how reliable the inferred relationship between input and output is and (ii) which causality exists between them. This is called the explanatory gap of AI. There are many situations where the explanatory gap does not matter. In those cases, all we need to know is that AI works as expected, and that, if it stops working as expected, this can be detected and fixed quickly. In such cases, we will not need specific regulatory safeguards.

Supervisors have a task when the outcome of an AI/ML method is critical for the functioning of internal controls, for compliance with external requirements or for banks' relationship with their customers or counterparties. In these cases, banks have to fulfil requirements for their AI/ML methods similar to those for any other quantitative model used in risk management: sound modelling practices, reliable processes surrounding the methods, rigid and effective validation, and appropriate management of the inherent model risk.

In a nutshell, the supervisory approach should be to look first at the scope of application of an AI/ML system. If an AI/ML application turns out to have a severe impact on informed decision-making, sound risk management, or otherwise a bank's fundamental functions, supervisory action will clearly be required. The aim is to keep operational risk reasonably contained.

Therefore, both supervisors and banks face challenges and opportunities alike. Supervisors have to adjust their approaches and skills to escort the introduction of AI/ML in banking. Banks have to give supervisors sound explanations of what their AI/ML systems actually do, as well as to what end. ●