

Regulatory Triggers, Technical Answers: Mapping Laws to Explainable AI Controls in the Brazilian Financial Sector

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Abstract. *This paper analyzes the regulatory framework for Explainable AI (XAI) in Brazil's financial sector, focusing on the period before the Bill Draft 2.338/2023. We argue that while no unified law on explainability exists, a functional governance structure has emerged through sector-specific regulations from the National Monetary Council (CMN) and the Central Bank of Brazil (BCB). By mapping relevant resolutions, we identify a focus on auditability and risk management in statistical models, rather than a broad right to explanation for consumers. We conclude that Brazil's evolving AI regulation must reconcile these sectoral rules with a broader, principle-based approach to ensure transparency and protect fundamental rights.*

1. Introduction

By framing social coexistence as a contract, Hobbes situated individual life within obligations and responsibilities [Macpherson 1990], establishing accountability as central to modern legal thought. This notion is challenged by Artificial Intelligence (AI) systems capable of autonomous decisions, raising the issue of explainability. Within this context, the present paper examines the normative sources of explainability in the Brazilian National Financial System (Sistema Financeiro Nacional - SFN) prior to Bill Draft 2.338/2023.

As in much of the world, Brazil's regulatory framework for AI remains under development, with general legislation still under consideration in Congress (Bill Draft 2.338/2023). AI currently lacks an official and broadly applicable definition, as the only legal concept appears in a Superior Electoral Court Resolution on political propaganda [Brasil 2019]. Consequently, explainability also remains largely undefined in the Brazilian legal system.

Given its reliance on statistical models and big data, the financial sector has been an early adopter of AI for credit scoring, risk management, and decision optimization. Ethical dilemmas are thus particularly acute, as bias in "AI systems used for credit allocation and insurance pricing disproportionately impacts historically marginalized communities, risking the perpetuation of economic inequities in future generations" [Long and Solaimani 2025, p. 3].

To assess how AI explainability may develop in financial use cases under broad regulatory compliance, a general evaluation of the legal scenario is necessary. While the absence of specific rules creates some legal uncertainty, the Brazilian system addresses omissions through the Law of Introduction to the Norms of Brazilian Law [Brasil 1942] (Lei de Introdução às Normas do Direito Brasileiro), which requires judges to apply analogy, custom, or general legal principles to such cases. Accordingly, laws of similar content may apply to AI explainability, and all use cases must respect fundamental rights such as equity and human dignity.

This study therefore examines core legal precepts at both the constitutional and infra-constitutional levels, alongside regulations with particular relevance, especially those of the Central Bank of Brazil and on automated decisions more broadly. Given the advanced stage of PL 2.338/2023, its text and international legal sources also offer a basis to anticipate key elements of forthcoming regulation on AI explainability in Brazilian finance. Although Brazil's AI legislation has yet to be approved by Congress, the absence of overarching rules does not amount to a regulatory vacuum. Governance often stems from sectoral agencies. In finance, the National Monetary Council (CMN) and the Central Bank of Brazil (BCB) effectively shape the framework through their resolutions, lacking a formal AI law.

Our central hypothesis is that the SFN currently lacks a unified concept of explainability. However, the widespread use of machine learning models has led to complementary notions that together create an effective, though sectoral and indirect, governance structure. These notions address explainability within the limits of legislation and legal principles, avoiding conflict with existing jurisprudence.

This paper is structured into four sections: the first reviews global AI explainability norms and Brazil's current legal instruments; the second details the methodology used to construct the textual corpus; the third presents the results; and the fourth discusses their implications and the contributions of Bill Draft 2.338/2023.

2. Research Methodology

Brazil's model of regulatory agencies, as noted by Scholze and Wimmer (2009), is a relatively recent development. It emerged in 1995 within a wave of liberal reforms and market opening to foreign capital, with the dual objectives of modernizing the state and introducing technical expertise into sector-specific regulation [Ortiz 2005; Scholze and Wimmer 2009]. As such, it is logical for a research aiming to investigate the finance sector, to focus on its regulatory institutions from 1995-2025: CMN and BCB.

It is within this institutional context that the present paper conducts an exploratory investigation into the norms of explainability within the Brazilian financial system. The research focuses on resolutions issued by the National Monetary Council (CMN) and the Central Bank of Brazil (BCB). The methodology involved a systematic search on the BCB's Busca de normas platform, where the researchers explored the regulations that were pertinent to statistical and machine learning models, focusing on keywords: “risco” (risk), “crédito” (credit), “escore” (scoring), “vulnerabilidade” (vulnerability), “modelos” (models) and “modelagem” (modeling). It is necessary to point out that the Busca Norma platform does not support Boolean research, so all research was conducted manually.

From the initial results, a multi-layered filtering approach was employed via content analysis. The first filter removed documents whose descriptions were irrelevant to the topic. The second filter involved a close reading of the remaining resolutions to select the most pertinent ones and eliminating duplicates, thereby consolidating the corpus for analysis. For such, the following **Inclusion Criteria (IC)** were employed:

- IC 1: Mentions of econometric, statistical and machine learning models.
- IC 2: Mentions of explanations for decisions created by models.
- IC 3: Mentions of risk management.

Broad consideration of applicable legislation and legal principles complements this analysis, taking Bill Draft 2.338/2023 as a starting point. The text currently being appreciated by the National Congress has developed with noticeable inspiration from international legislation, and appears to reflect laws and principles that doctrine and jurisprudence would find applicable to the matter, according to the rules of the Law of Introduction to the Norms of Brazilian Law.

3. Results

Table 1 - Current sources of legal definition for AI Explainability in Finance

Source	Subject	Concept
Decree-Law n° 4.657/1942	Law of Introduction to the Norms of Brazilian Law (Lei de Introdução às Normas do Direito Brasileiro)	Applicability of analogy, custom, and principles of law to omissions.
Brazilian Federal Constitution	Fundamental principles constituting the legal basis of the Brazilian legal system	Fundamental rights and principles.
Law n° 13.709/2018	General Data Protection law.	Right to review decisions taken solely based on automated personal data analysis, and a requirement of explainability.
Bill Draft 2.338/2023	Brazilian AI Law Proposal.	Core definitions for AI, governance, and explainability.
EU AI Act	General AI Regulation of the European Union.	Core definitions for AI and explainability; main source for the Brazilian Bill Draft 2.338/2023.
CMN Resolution n° 4.557/2017	National Monetary Council resolution on risk management and capital management.	Methodologies and structural arrangements to ensure effective risk and capital management.

4. Discussion

Our investigation of the universe of the textual corpus has partially validated our hypothesis. There is extensive documentation that details how Machine Learning and statistical models should be explainable and auditable by the regulator of the Brazilian National Financial System. However, currently, such efforts are more limited to such models and do not comprehend the full specificity of AI systems, which may even inhibit its development in the financial sector.

Another issue is that despite the BCB and CMN efforts to regulate AI in various aspects, such as vulnerability, risk management and capital allocation, there is still a vacuum that needs to be fulfilled. Notably, our investigation has shown that there is a particular need for a common terminology to unify all AI systems rules.

The current scenario for legislation exhibits even less specificity. Although Bill Draft 2.338/2023 does account for core concepts and aims to better define AI and AI explainability, without it being in effect, current jurisprudence lacks definition and replicability. In practice, the application of analogy and the general directives set forth by legal principles may provide resolution on a case-to-case basis, but fails to guarantee broad regulation and the legal security that would be afforded by the effect of the law. And within the dynamics of separation of powers and hierarchy of norms, this casts a degree of vulnerability to sectoral regulation.

A particular finding that is an interesting starting point for further research is how the lack of regulation might actually be inhibiting the development of bolder approaches in AI research. Such analysis could be conducted through structured interviews with credit and AI developers in those institutions.

5. References

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