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The Impact of Restrictive Cryptocurrency Regulation on Morocco's Foreign Exchange Market

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Abstract. This study examines the regulation of blockchain technology and cryptocurrencies in Morocco's foreign exchange market, focusing on the challenges posed by restrictive regulatory frameworks and their implications for financial stability. Although cryptocurrency transactions have been officially prohibited since 2017, their use has continued to expand through informal and peer-to-peer channels, raising concerns about the effectiveness of prohibition-based regulation. Using a systematic literature review based on the PRISMA framework, this study analyzes academic publications, institutional reports, and international regulatory developments covering the period 2018–2026. The findings reveal a persistent mismatch between formal regulation and actual market practices, resulting in regulatory arbitrage, weak enforcement, and the expansion of informal cryptocurrency activities. The analysis further highlights significant macro-financial risks, including capital flight, exchange rate pressures, and reduced monetary policy effectiveness. By explicitly linking cryptocurrency regulation to foreign exchange market dynamics in an emerging economy, the study addresses an underexplored area in the literature. It concludes that Morocco's current restrictive approach is unlikely to remain effective and argues for the adoption of a more adaptive, risk-based regulatory framework capable of promoting financial innovation while preserving macroeconomic stability and regulatory oversight.

Keywords: *Blockchain; Cryptocurrencies; Foreign exchange market; Financial regulation; Macroeconomic stability; Morocco.*

1. Introduction

The rapid advancement of digital technologies has fundamentally reshaped the global financial landscape, introducing new financial instruments, infrastructures, and modes of exchange. Among these innovations, blockchain technology and cryptocurrencies have emerged as transformative forces with the potential to disrupt traditional financial systems, including the foreign exchange (forex) market. Initially designed as decentralized alternatives to conventional currencies, cryptocurrencies such as Bitcoin and Ethereum have experienced substantial growth in both developed and emerging economies. Their increasing adoption reflects not only technological progress but also profound shifts in financial behavior, particularly in environments characterized by limited financial inclusion, regulatory barriers, and macroeconomic uncertainty. Consequently, policymakers and regulatory authorities worldwide are facing growing challenges in adapting existing financial regulations to these digital assets while maintaining market stability.

Within this evolving global environment, the interaction between blockchain-based assets and foreign exchange markets has become a critical area of academic and policy interest. Traditionally, forex markets operate under highly regulated frameworks in which central banks and monetary authorities oversee exchange rate stability, currency flows, and capital movements. Cryptocurrencies, however, introduce a decentralized financial architecture that functions outside conventional regulatory boundaries, enabling cross-border transactions without intermediaries. This transformation raises fundamental questions regarding the ability of existing regulatory systems to monitor, regulate, and integrate these emerging technologies effectively. It also challenges the sustainability of prohibition-based regulatory strategies, particularly in emerging economies where institutional capacity and enforcement mechanisms remain limited.

Morocco provides a particularly relevant context for examining these dynamics. In 2017, Moroccan authorities, including Bank Al-Maghrib and the Foreign Exchange Office, formally prohibited cryptocurrency transactions, citing concerns related to financial stability, consumer protection, and illicit financial activities. Despite this restrictive regulatory stance, cryptocurrency adoption has continued to expand, largely through informal and peer-to-peer channels. This contradiction between formal regulation and actual market behavior reflects a broader phenomenon observed across many emerging economies: restrictive regulations often fail to eliminate digital financial activities and may instead contribute to the growth of informal markets. Therefore, Morocco offers an important case study for understanding how regulatory frameworks interact with technological innovation and changing financial practices.

The growing use of cryptocurrencies in Morocco extends beyond a purely technological issue and increasingly represents an economic and institutional challenge. On the one hand, digital assets provide potential benefits, including faster international transactions, lower transaction costs, and improved access to financial services. On the other hand, their use outside regulated systems creates significant macro-financial risks, particularly in terms of capital flight, exchange rate volatility, and reduced effectiveness of monetary policy. These risks are especially critical in the foreign exchange market, where effective management of currency flows remains essential for macroeconomic stability. The emergence of decentralized channels capable of bypassing official controls therefore raises serious concerns regarding the adequacy of current regulatory frameworks.

From a theoretical perspective, these developments can be interpreted through the concepts of regulatory arbitrage and institutional theory. Regulatory arbitrage occurs when economic agents exploit inconsistencies or gaps in regulatory systems to circumvent restrictions, often relocating activities toward less regulated or informal environments. In Morocco, the prohibition of cryptocurrencies has not eradicated their usage but has instead redirected activity toward decentralized and less transparent channels. Institutional theory further suggests that when formal regulatory systems fail to align with technological evolution and market realities, informal mechanisms naturally emerge as adaptive responses. These theoretical perspectives provide a strong analytical framework for explaining both the persistence of cryptocurrency adoption and the limitations of restrictive regulatory strategies.

Despite the growing relevance of this issue, existing literature has primarily focused on the technological foundations of blockchain, the monetary implications of cryptocurrencies, or their speculative characteristics. Limited research has directly examined the relationship between cryptocurrency regulation and foreign exchange market dynamics, particularly in emerging economies. This gap is significant because forex markets represent a crucial interface between domestic financial systems and global capital flows. Understanding how cryptocurrencies affect this market, and how regulatory systems respond, is therefore essential for both academic inquiry and public policy development.

Although previous studies have significantly advanced the understanding of blockchain technology, cryptocurrency markets, and financial regulation, several important gaps remain. First, most existing research examines cryptocurrencies from technological, financial, or legal perspectives in isolation, without integrating their implications for foreign exchange market dynamics. Second, empirical evidence on emerging economies remains relatively limited, despite the specific institutional and monetary challenges these countries face. Third, few studies have explored how restrictive regulatory frameworks influence informal cryptocurrency adoption and regulatory arbitrage, particularly in the Moroccan context. These limitations hinder a comprehensive understanding of the interaction between cryptocurrency regulation, market behaviour, and macro-financial stability. Consequently, a systematic review that synthesizes existing evidence and identifies emerging trends is needed to provide an integrated analytical framework and inform more effective regulatory strategies.

The originality of this study lies in its integrated analysis of cryptocurrency regulation within the context of Morocco's foreign exchange market. Theoretically, it brings together the concepts of regulatory arbitrage, institutional theory, and foreign exchange market dynamics to provide a comprehensive framework for understanding the effects of restrictive cryptocurrency regulation. Methodologically, the study adopts a systematic literature review based on the PRISMA framework, combining academic publications with institutional reports to provide a structured and transparent synthesis of existing knowledge. From a practical perspective, the research offers policy-relevant insights for emerging economies by assessing the implications of restrictive regulatory approaches for monetary stability, foreign exchange management, and financial governance. These contributions extend the existing literature by providing an integrated perspective on an issue that has received limited attention, particularly in the Moroccan context.

Against this backdrop, this study examines the regulation of blockchain and cryptocurrencies within Morocco's foreign exchange market, with a particular focus on current challenges and emerging future risks. Specifically, the research addresses the following question: why does restrictive regulation fail to limit cryptocurrency adoption in Morocco, and what implications does this have for financial stability, monetary sovereignty, and foreign exchange market integrity? By addressing this question, the study contributes to a deeper understanding of the limitations of prohibition-based regulation and highlights the need for more adaptive and forward-looking regulatory approaches.

To achieve this objective, the study adopts a systematic literature review based on the PRISMA protocol. The literature review focuses on academic publications, institutional reports, and regulatory developments published between 2018 and 2025. Building on this evidence, the study extends its analysis through a forward-looking assessment to 2026, as illustrated in Figures 1–3. This approach captures the recent evolution of cryptocurrency adoption and regulatory responses while providing insights into potential future developments. The analysis integrates academic publications, institutional reports, and comparative evidence from selected emerging economies. A thematic analysis is conducted to identify key dimensions related to regulatory challenges, adoption patterns, and financial risks.

The significance of this research extends beyond the Moroccan context, as many emerging economies face similar difficulties in regulating rapidly evolving financial technologies. As digital finance continues to expand, the tension between innovation and regulation is expected to intensify, requiring regulatory approaches that go beyond traditional models. In this regard, Morocco's experience offers valuable insights into the consequences of restrictive regulation, the resilience of informal markets, and the systemic risks associated with regulatory gaps.

Ultimately, this study argues that Morocco's current prohibition-based regulatory framework may be increasingly ineffective and potentially counterproductive in addressing the challenges posed by cryptocurrencies in the foreign exchange market. By pushing these activities outside the formal financial system, restrictive policies may increase opacity, weaken regulatory oversight, and amplify systemic risks. A more effective response would involve the development of adaptive, risk-based regulatory frameworks capable of balancing financial innovation with market integrity and macroeconomic stability.

The remainder of this paper is organized as follows. Section 2 reviews the literature on blockchain technology, cryptocurrency regulation, and their implications for foreign exchange markets, while identifying the main research gaps. Section 3 presents the research methodology based on the PRISMA systematic literature review framework. Section 4 discusses the main findings concerning cryptocurrency adoption, regulatory challenges, and macro-financial risks in the Moroccan context. Finally, Section 5 concludes the paper by summarizing the main findings, discussing their policy implications, acknowledging the study's limitations, and suggesting avenues for future research.

2. Literature Review

The rapid expansion of blockchain technology and cryptocurrencies has generated an extensive and multidisciplinary body of academic literature, reflecting their transformative implications for global financial systems. Blockchain, defined as a decentralized and distributed ledger technology, enables secure, transparent, and immutable transactions without the need for centralized intermediaries. Narayanan et al. (2016) provide one of the most comprehensive foundational analyses of Bitcoin, emphasizing the role of consensus mechanisms in ensuring trust within decentralized networks. This technological architecture challenges traditional financial intermediation by reducing reliance on institutional trust, thereby opening new avenues for peer-to-peer financial transactions, including cross-border exchanges.

Building on this technological foundation, the literature has increasingly examined the economic nature and financial behavior of cryptocurrencies. A central debate concerns whether cryptocurrencies should be considered currencies, commodities, or speculative assets. Baur et al. (2018) empirically demonstrate that Bitcoin behaves primarily as a speculative asset rather than a stable medium of exchange, due to its high volatility and limited transactional use. Similarly, Corbet et al. (2019) highlight the extreme price fluctuations and weak correlation with traditional financial assets, reinforcing the view that cryptocurrencies are driven largely by speculative dynamics. Yermack (2015) further argues that cryptocurrencies fail to satisfy the core functions of money, particularly as a unit of account and store of value, raising concerns about their suitability within formal financial systems such as foreign exchange markets.

In parallel, a substantial body of research has focused on the regulatory challenges associated with cryptocurrencies. Their decentralized and borderless nature complicates traditional regulatory frameworks based on national jurisdiction and centralized oversight. Auer and Claessens (2018) emphasize that regulators face a critical trade-off between encouraging innovation and maintaining financial stability. Arner, Barberis, and Buckley (2017) further argue that financial technologies, including blockchain, are reshaping regulatory paradigms, requiring the development of new approaches such as RegTech to enhance monitoring and compliance. In this context, the regulation of cryptocurrencies becomes particularly complex in emerging economies, where institutional capacity, enforcement mechanisms, and technological infrastructure may be limited.

Recent contributions from international financial institutions have underscored the macro-financial implications of cryptocurrencies, particularly in relation to capital flows and monetary policy. Adrian (2021) highlights that digital currencies can facilitate cross-border transactions outside traditional financial channels, thereby weakening the effectiveness of capital controls and monetary policy transmission. Similarly, Frost et al. (2020) show that cryptocurrency-related financial structures are increasingly global and interconnected, increasing the risk of cross-border financial spillovers. These issues are especially relevant in the context of foreign exchange markets, where the regulation of currency flows is essential for maintaining macroeconomic stability.

Another important dimension in the literature is the concept of regulatory arbitrage, which refers to the strategic exploitation of regulatory differences across jurisdictions. Zetzsche et al. (2018) argue that the global and decentralized nature of cryptocurrencies significantly amplifies opportunities for regulatory arbitrage, allowing users to bypass national restrictions through digital platforms. Makarov and Schoar (2020) provide empirical evidence of this phenomenon, demonstrating that cryptocurrency markets exhibit significant cross-border arbitrage opportunities due to price discrepancies and regulatory fragmentation. This suggests that restrictive regulatory approaches may be ineffective, as they do not eliminate cryptocurrency usage but instead displace it into less regulated or informal environments.

Overall, the literature reveals a fundamental tension between the transformative potential of blockchain technology and the limitations of existing regulatory systems. While cryptocurrencies introduce new opportunities for efficiency and financial innovation, they also pose significant challenges for financial stability, regulatory enforcement, and monetary governance. This tension is particularly pronounced in emerging economies, where regulatory frameworks are often less developed and more vulnerable to disruption. Understanding this balance is essential for analyzing the role of cryptocurrencies within foreign exchange markets and assessing the effectiveness of current regulatory strategies.

The interaction between cryptocurrencies and foreign exchange markets has become an increasingly important topic in financial research, particularly in the context of digitalization and global capital mobility. Unlike traditional currencies, cryptocurrencies operate outside central bank control and are not governed by conventional exchange rate regimes. This characteristic enables them to function as alternative channels for cross-border transactions, potentially bypassing official foreign exchange systems. Makarov and Schoar (2020) demonstrate that cryptocurrency markets are highly globalized and exhibit substantial cross-border trading activity, often driven by price discrepancies and regulatory differences. Their findings indicate that cryptocurrencies are not only speculative assets but also instruments that can influence international capital flows.

Recent literature has examined how cryptocurrencies interact with exchange rate systems, especially in emerging economies. Auer, Cornelli, and Frost (2022) provide empirical evidence that cryptocurrency adoption tends to be higher in countries experiencing inflation, currency depreciation, or capital flow restrictions. In such environments, cryptocurrencies may serve as alternative stores of value and mechanisms for transferring funds internationally. This creates parallel financial systems that can reduce reliance on domestic currencies and weaken the effectiveness of exchange rate policies. Similarly, the Bank for International Settlements (BIS, 2023) highlights that crypto-assets can facilitate unregulated capital movements, complicating the implementation of monetary policy and exchange rate management.

The implications of these developments are particularly significant for emerging economies, where foreign exchange markets play a central role in maintaining macroeconomic stability. Adrian (2021) argues that digital currencies can weaken the effectiveness of capital controls by enabling cross-border transactions outside regulated financial channels. This reduces the ability of policymakers to monitor and manage currency flows, thereby increasing vulnerability to external shocks. In the same vein, the International Monetary Fund (IMF, 2023) emphasizes that increasing cryptocurrency usage may lead to a process of partial currency substitution, often referred to as cryptoization, which can undermine monetary sovereignty and exchange rate stability.

Furthermore, recent empirical studies indicate that cryptocurrencies are increasingly integrated into the global financial system, with potential spillover effects on traditional assets, including currencies. Liu and Tsyvinski (2021) show that cryptocurrency returns are influenced by macro-financial variables such as global liquidity and investor sentiment. This suggests that cryptocurrencies are becoming part of a broader interconnected financial ecosystem. As a result, shocks in cryptocurrency markets may indirectly affect exchange rate dynamics, particularly in economies with less developed financial systems.

Finally, the literature highlights that regulatory approaches play a crucial role in shaping the relationship between cryptocurrencies and foreign exchange markets. Fragmented or restrictive regulatory environments may unintentionally encourage the development of informal cryptocurrency markets. Auer et al. (2022) emphasize that differences in regulatory frameworks across countries create incentives for cross-border arbitrage, reducing the effectiveness of national regulatory policies. This suggests that prohibition-based approaches may not eliminate cryptocurrency usage but instead shift it toward less regulated and less transparent channels.

Overall, the literature demonstrates that cryptocurrencies are increasingly interconnected with foreign exchange markets, particularly in emerging economies. While they offer potential benefits in terms of transaction efficiency and financial flexibility, they also introduce significant risks related to capital flow volatility, regulatory challenges, and monetary policy effectiveness. These dynamics are essential for understanding the Moroccan context, where restrictive regulation coexists with growing informal adoption of cryptocurrencies.

The regulation of cryptocurrencies has evolved significantly across jurisdictions, reflecting diverse institutional capacities, economic structures, and policy priorities. At the global level, regulatory approaches can generally be classified into three categories: permissive, adaptive, and restrictive frameworks. Advanced economies have increasingly moved toward adaptive regulatory models that seek to integrate crypto-assets into existing financial systems while maintaining financial stability and market integrity. For instance, the Financial Stability Board (FSB, 2023) emphasizes the importance of establishing consistent international standards to address risks associated with crypto-assets, including market fragmentation, liquidity risks, and cross-border regulatory gaps. This approach reflects a growing recognition that cryptocurrencies cannot be effectively addressed through prohibition alone.

In parallel, the Bank for International Settlements (BIS) has highlighted the systemic implications of crypto-assets for global financial stability. According to BIS (2023), the rapid expansion of crypto markets, combined with their high volatility and interconnectedness, poses significant risks to the traditional financial system. These risks are amplified by the absence of harmonized regulatory frameworks across jurisdictions, which creates opportunities for regulatory arbitrage. Consequently, the BIS advocates for a coordinated international regulatory response that emphasizes transparency, risk management, and cross-border cooperation.

In contrast, many emerging and developing economies have adopted more restrictive or ambiguous regulatory approaches. These strategies are often driven by concerns related to capital flight, exchange rate instability, and limited regulatory capacity. The International Monetary Fund (IMF, 2023) notes that countries with weaker financial systems are more likely to impose restrictions on cryptocurrency usage due to the challenges associated with monitoring decentralized financial activities. However, the IMF also highlights that such restrictions may lead to unintended consequences, including the expansion of informal crypto markets and reduced regulatory oversight.

The literature also emphasizes the importance of regional regulatory dynamics, particularly in the Middle East and North Africa (MENA) region. Regulatory approaches in this region remain highly heterogeneous, reflecting differences in economic development and policy priorities. While some countries have adopted innovation-friendly frameworks to attract investment in digital finance, others have maintained strict prohibitions on cryptocurrency transactions. This divergence illustrates the absence of a unified regional regulatory strategy, which further complicates efforts to manage cross-border crypto activities. As noted by Arner et al. (2017), the global nature of financial technologies requires regulatory frameworks that are both flexible and internationally coordinated.

Another important aspect highlighted in recent literature is the role of regulatory design in shaping market outcomes. Zetzsche et al. (2018) argue that regulatory frameworks that focus solely on prohibition tend to be ineffective, as they fail to address the underlying drivers of cryptocurrency adoption. Instead, such approaches often push activities into informal or decentralized channels, reducing transparency and increasing systemic risk. In contrast, adaptive regulatory frameworks that incorporate risk-based supervision and technological monitoring tools may enhance regulatory effectiveness while supporting innovation.

Furthermore, comparative studies suggest that regulatory fragmentation remains one of the key challenges in the governance of crypto-assets. Differences in legal definitions, licensing requirements, and enforcement mechanisms across countries create opportunities for cross-border arbitrage. This issue is particularly relevant in the context of foreign exchange markets, where cryptocurrencies can facilitate capital movements out official channels. As a result, national regulatory efforts may be undermined by the global and decentralized nature of crypto markets.

Overall, the literature highlights a fundamental tension between national regulatory sovereignty and the global nature of cryptocurrencies. While countries seek to maintain control over their financial systems and foreign exchange markets, the decentralized structure of blockchain technology limits the effectiveness of purely domestic regulatory measures. This underscores the need for coordinated international frameworks and adaptive regulatory strategies capable of addressing both the opportunities and risks associated with crypto-assets. In this context, the Moroccan case reflects broader challenges faced by emerging economies attempting to regulate rapidly evolving financial technologies within constrained institutional environments.

Despite the rapid expansion of academic research on cryptocurrencies, blockchain technology, and financial regulation, several important gaps remain, particularly regarding their interaction with foreign exchange markets in emerging economies. The majority of existing studies focus either on the technological architecture of blockchain systems or on the financial characteristics of cryptocurrencies as speculative assets. While these contributions provide valuable insights, they often overlook the broader macro-financial implications of cryptocurrencies, especially in relation to exchange rate regimes and capital flow management. Liu and Tsyvinski (2021) emphasize that most empirical research has concentrated on return dynamics and asset pricing, with limited attention to the role of cryptocurrencies within monetary systems and foreign exchange markets.

In addition, the literature on cryptocurrency regulation remains heavily concentrated on advanced economies. Existing studies frequently analyze regulatory frameworks in jurisdictions such as the United States or the European Union, where institutional capacity allows for more sophisticated and adaptive regulatory approaches (Auer & Claessens, 2018). In contrast, there is relatively limited research addressing the specific challenges faced by emerging economies, where regulatory environments are often characterized by institutional constraints, limited enforcement capacity, and greater exposure to macroeconomic instability. This imbalance highlights the need for context-specific analyses that take into account the structural characteristics of developing financial systems.

Another significant gap concerns the relationship between restrictive regulatory approaches and actual market behavior. While several studies acknowledge the existence of informal cryptocurrency markets, few have systematically examined how prohibition-based policies influence their development and structure. Makarov and Schoar (2020) provide evidence of cross-border arbitrage in cryptocurrency markets, but their analysis does not explicitly consider how national regulatory restrictions shape these dynamics. Similarly, reports from international institutions such as the International Monetary Fund (IMF, 2023) and the Bank for International Settlements (BIS, 2023) highlight the risks associated with unregulated crypto adoption but offer limited insight into the mechanisms through which users circumvent regulatory constraints.

Furthermore, the interaction between cryptocurrencies and foreign exchange markets remains underexplored. Although some studies have examined the implications of digital assets for capital flows and monetary policy, few have explicitly linked these developments to exchange rate management and foreign exchange regulation. The IMF (2023) notes that increasing use of crypto-assets may weaken capital flow management measures and complicate macroeconomic policy implementation, particularly in economies with limited regulatory capacity.

Another limitation of the existing literature is the lack of integrated analytical frameworks. Most studies adopt a single perspective, focusing either on technological innovation, financial risk, or regulatory challenges. However, the complexity of cryptocurrency ecosystems requires a multidimensional approach that considers the interaction between these different aspects. Arner, Barberis, and Buckley (2017) argue that financial technologies are fundamentally transforming the structure of financial systems, making it necessary to develop more comprehensive analytical frameworks.

In response to these gaps, the present study proposes an integrated analysis of blockchain regulation within the foreign exchange market in Morocco. It contributes to the literature by explicitly linking regulatory frameworks to market behavior, with particular attention to the mismatch between restrictive policies and the persistence of informal cryptocurrency adoption. By focusing on Morocco, the study provides new insights into the challenges faced by emerging economies in regulating digital financial technologies under conditions of institutional and regulatory constraints.

Moreover, this research adopts a systematic literature review based on the PRISMA protocol, ensuring a transparent and structured approach to the selection and analysis of sources. It also incorporates a comparative perspective by situating the Moroccan case within broader international and regional regulatory trends. This approach allows for a more comprehensive understanding of how different regulatory models influence cryptocurrency adoption and financial stability.

Finally, the study advances the literature by emphasizing the implications of cryptocurrency adoption for foreign exchange markets, an area that remains relatively underexplored. By analyzing the interaction between digital assets, capital flows, and regulatory frameworks, the research provides valuable insights for policymakers seeking to design effective regulatory strategies. It highlights the limitations of prohibition-based approaches and supports the development of adaptive, risk-based regulatory frameworks capable of balancing financial innovation with macroeconomic stability.

3. Methodology

This study adopts a systematic literature review methodology based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. This approach ensures a structured, transparent, and replicable process for identifying, selecting, and analyzing relevant academic and institutional sources. It is particularly suitable for this research due to the growing body of literature on cryptocurrencies and the limited availability of primary data in emerging economies such as Morocco.

The review process follows four sequential stages: identification, screening, eligibility, and inclusion. Each stage is supported by clearly defined criteria and systematic filtering procedures. Table 1 summarizes the search strategy adopted for the systematic literature review, including the databases consulted, the keywords used, the rationale for their selection, and the corresponding outcomes.

Table 1: Search Strategy and Data Sources

Database / Source	Keywords Used	Justification	Outcome
Scopus	cryptocurrency regulation, blockchain forex	High-quality peer-reviewed sources	Selected
Web of Science	digital assets, financial regulation	Complementary academic coverage	Selected
Google Scholar	crypto emerging markets, forex crypto	Broad search coverage	Filtered
IMF / BIS / FSB	crypto regulation, financial stability	Institutional and policy reports	Selected

Source : Author's compilation based on database selection criteria from Scopus, Web of Science, International Monetary Fund, Bank for International Settlements, and Financial Stability Board.

The search strategy combines keywords related to cryptocurrencies, blockchain technology, foreign exchange markets, and financial regulation. Boolean operators (AND, OR) were used to refine the search results and ensure relevance.

During the identification phase, an initial set of academic and institutional sources was collected. Duplicate records were removed to ensure consistency. The screening phase involved reviewing titles and abstracts to eliminate irrelevant studies. The inclusion and exclusion criteria applied during the screening process are presented in Table 2. These criteria ensured the relevance, quality, and consistency of the studies retained for the review.

Table 2 : Inclusion and Exclusion Criteria

Criteria Type	Description
Inclusion Criteria	Peer-reviewed articles and institutional reports (IMF, BIS, FSB) published between 2018 and 2025; English language.
Exclusion Criteria	Non-academic sources, blogs, duplicates, irrelevant topics
Thematic Relevance	Crypto regulation, blockchain, forex markets, emerging economies
Quality Criteria	Indexed journals (Scopus, Web of Science), recognized institutions

Source : Adapted from the PRISMA guidelines

The eligibility phase consisted of a full-text review of selected studies to ensure their academic rigor and direct relevance to the research objectives. Table 3 presents the different stages of the PRISMA selection process, from the identification of records to the final inclusion of studies considered in the systematic literature review.

Table 3 : PRISMA Selection Process

Stage	Number of Articles
Records identified	120
Records after duplicates removed	95
Records screened	95
Full-text articles assessed	60
Studies included in final review	35

Source : Author's elaboration following the PRISMA screening protocol

Following the selection process, a thematic analysis was conducted to synthesize the literature. The analysis focuses on identifying patterns, divergences, and key insights related to the research topic. To facilitate the thematic synthesis of the selected studies, Table 4 presents the analytical framework adopted in this research, highlighting the main themes, their descriptions, and the corresponding analytical objectives.

To complement the systematic literature review, the study incorporates a prospective assessment extending to 2026. The projections presented in Figures 1–3 are conceptual and are based on the synthesis of the reviewed literature, recent institutional reports, and observed market trends. They are intended to illustrate plausible future developments rather than to provide econometric forecasts.

Table 4: Analysis Framework

Theme	Description	Analytical Objective
Regulatory Challenges	Legal ambiguity, weak enforcement	Evaluate regulatory limitations
Adoption Dynamics	Informal markets, peer-to-peer usage	Explain market behavior
Financial Risks	Capital flight, volatility	Assess macroeconomic impact
Comparative Analysis	Cross-country regulation	Identify best practices

Source : Author's thematic synthesis

This thematic classification enables a structured interpretation of the literature and supports the development of analytical insights. Despite its methodological rigor, the study presents certain limitations. As with any systematic literature review, the adopted methodology presents certain limitations. These limitations and their potential implications for the study are summarized in Table 5.

Table 5 : Methodological Limitations

Limitation	Description	Impact
Use of Secondary Data	Reliance on existing literature	Potential bias
Lack of Local Data	Limited official statistics in Morocco	Reduced empirical validation
Rapid Market Evolution	Fast-changing crypto environment	Temporal limitations

Source : Author's assessment based on systematic literature review limitations and PRISMA methodology.

Overall, the PRISMA-based methodology, supported by structured tables and transparent criteria, provides a robust framework for analyzing the regulatory challenges and risks associated with blockchain and cryptocurrencies in the Moroccan foreign exchange market.

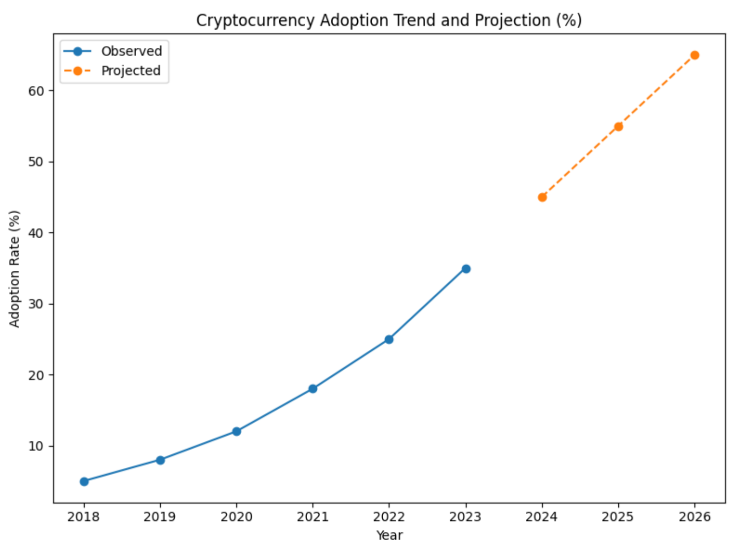
4. Results and Discussion

The results of the systematic literature review reveal a structural mismatch between the formal regulatory framework governing cryptocurrencies in Morocco and the actual dynamics of market adoption. This section presents the findings through three interconnected dimensions: adoption trends, financial risks, and regulatory effectiveness. The analysis integrates both observed patterns and projected dynamics, providing a forward-looking perspective on the implications of cryptocurrency development for the foreign exchange market.

a. Cryptocurrency Adoption Dynamics and Future Trends

The analysis indicates a continuous increase in cryptocurrency adoption in Morocco and comparable emerging economies, despite restrictive regulatory frameworks. This trend is primarily driven by structural economic factors such as limited financial inclusion, constraints on foreign exchange access, and increasing digital connectivity.

Figure 1: Cryptocurrency Adoption Trend and Projection (2018–2026)



Source: Author's elaboration based on literature synthesis and projected trends (2018–2026).

The figure illustrates a steady rise in cryptocurrency adoption from 2018 to 2023, followed by a projected acceleration through 2026. This trajectory reflects the growing integration of digital assets into financial behavior, particularly for cross-border transactions and alternative investment strategies.

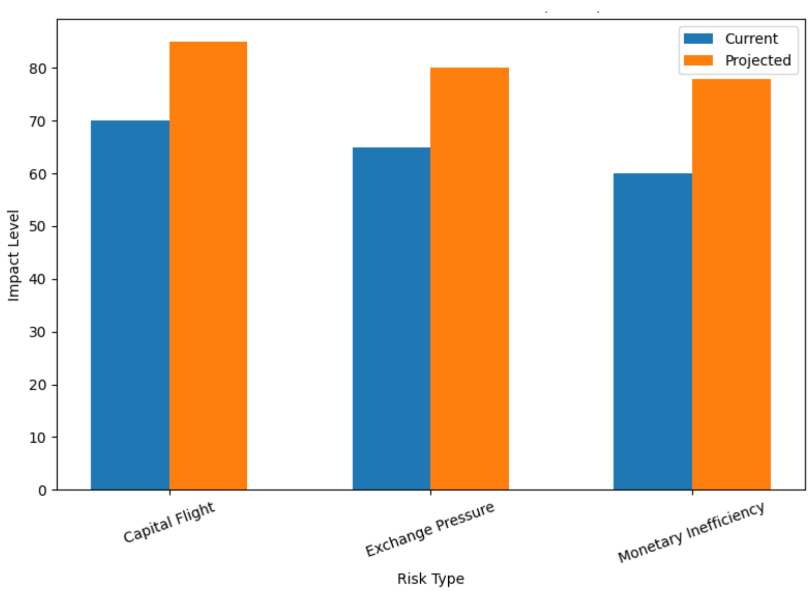
The persistence of adoption despite regulatory prohibition highlights the limitations of restriction-based policies. Rather than suppressing usage, such policies tend to redirect activity toward decentralized and informal channels. This finding is consistent with the concept of institutional mismatch, where formal regulatory frameworks fail to align with market realities.

Moreover, the projected growth suggests that cryptocurrency adoption is likely to become structurally embedded in financial practices. This raises critical concerns regarding the sustainability of current regulatory approaches and their capacity to adapt to ongoing technological change.

b. Financial Risks and Macroeconomic Implications

The expansion of cryptocurrency usage introduces several risks for the foreign exchange market, particularly in terms of capital flows, exchange rate stability, and monetary policy effectiveness.

Figure 2: Current vs Projected Forex Risks



Source: Author's elaboration based on literature synthesis and projected trends (2018–2026).

The figure compares current and projected levels of key risks, showing a clear upward trend across all dimensions. Capital flight, exchange rate pressure, and monetary inefficiency are expected to intensify as cryptocurrency adoption increases.

The findings indicate that cryptocurrencies may significantly alter the structure of foreign exchange markets by enabling unregulated cross-border transactions. This reduces the effectiveness of capital controls and weakens the ability of central banks to manage currency stability.

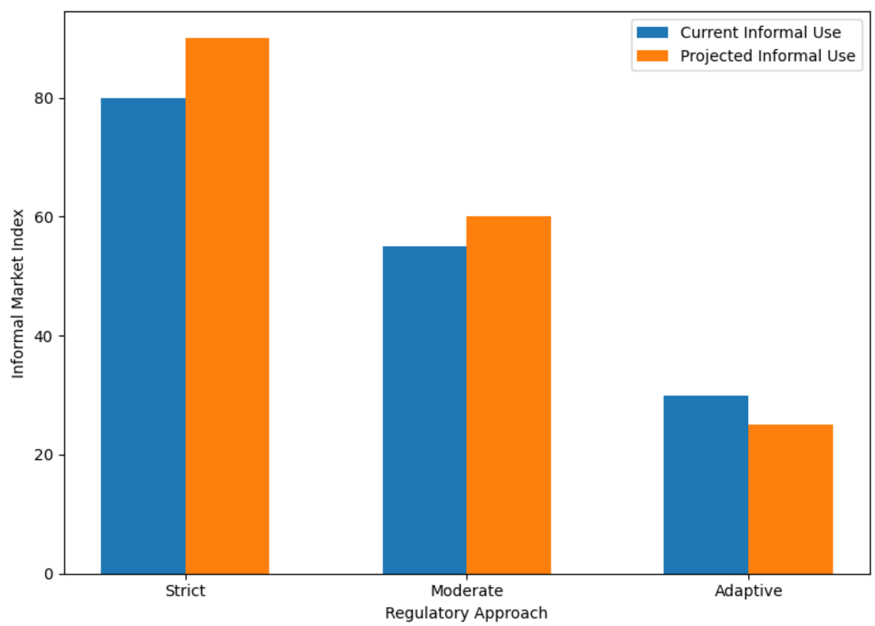
The projected increase in capital flight reflects the growing use of cryptocurrencies as alternative channels for transferring value outside regulated financial systems. This creates substantial challenges for policymakers, as traditional monitoring mechanisms become less effective.

In addition, increasing pressure on exchange rates may result from reduced demand for domestic currency, as users shift toward digital assets. This could lead to higher volatility and reduced monetary sovereignty over time.

c. Regulatory Effectiveness and Market Response

The analysis highlights a critical relationship between regulatory approaches and market behavior. Specifically, restrictive policies appear to be associated with higher levels of informal cryptocurrency usage.

Figure 3: Regulation vs Informal Market (Current vs Projection)



Source: Author's elaboration based on literature synthesis and projected trends (2018–2026).

The figure demonstrates that stricter regulatory environments are correlated with higher levels of informal market activity, both in current conditions and future projections.

These results confirm that prohibition-based regulation may generate unintended consequences by pushing cryptocurrency activities outside the formal financial system. This phenomenon can be explained through regulatory arbitrage, where users exploit technological alternatives to bypass restrictions.

In the Moroccan context, the persistence and projected growth of informal markets suggest that the current regulatory framework may be counterproductive. Instead of mitigating risks, it may increase financial opacity and reduce the effectiveness of oversight.

Conversely, more adaptive regulatory approaches appear to limit informal activity by providing regulated channels for participation while maintaining institutional control.

d. Discussion Contribution

This study provides three main contributions:

1. It demonstrates the ineffectiveness of prohibition-based regulation in controlling cryptocurrency adoption.
2. It establishes a direct link between cryptocurrencies and foreign exchange market dynamics.
3. It offers a forward-looking perspective through projections, highlighting future risks and policy challenges.

5. Conclusion

This study explored the regulation of blockchain technology and cryptocurrencies within Morocco's foreign exchange market, with particular emphasis on current regulatory challenges and emerging future risks. Using a systematic literature review based on the PRISMA framework, the research offers a structured and comprehensive assessment of the complex interactions between regulatory policies, market behavior, and financial stability in the context of an emerging economy.

The findings highlight a significant disconnect between Morocco's restrictive regulatory framework and the actual patterns of cryptocurrency adoption. Although cryptocurrency transactions have been officially prohibited since 2017, their use has continued to expand through informal, decentralized, and peer-to-peer channels. This evidence underscores the limitations of prohibition-based regulatory strategies in addressing the challenges associated with rapidly evolving digital financial technologies. Instead of eliminating cryptocurrency usage, restrictive policies appear to shift these activities toward less transparent environments, thereby weakening regulatory oversight and increasing systemic vulnerabilities.

The study further demonstrates that the expanding adoption of cryptocurrencies may substantially affect the foreign exchange market. In particular, alternative decentralized channels for cross-border transactions can undermine capital control mechanisms, increase exchange rate volatility, and weaken the transmission of monetary policy. These risks are likely to intensify in the coming years, as suggested by projected trends in cryptocurrency adoption and financial risk indicators. Consequently, the current regulatory framework may become increasingly unsustainable in the face of ongoing technological and financial transformation.

From a theoretical standpoint, the results confirm the relevance of regulatory arbitrage and institutional mismatch in explaining the persistence of cryptocurrency adoption within restrictive regulatory environments. When formal institutions fail to adapt to technological progress and market realities, informal financial practices tend to emerge as alternative mechanisms. This phenomenon is particularly visible in Morocco, where decentralized platforms enable users to bypass formal regulatory constraints.

This research contributes to the literature in several important ways. First, it establishes a clear connection between cryptocurrency regulation and foreign exchange market dynamics, a research area that remains relatively underexplored, particularly in emerging economies. Second, it provides a forward-looking perspective by incorporating projections that illustrate the potential evolution of adoption patterns and associated risks. Third, it offers an integrated synthesis of existing literature by combining technological, financial, and regulatory perspectives into a unified analytical framework.

From a policy perspective, the findings suggest the need for a transition toward a more adaptive and risk-based regulatory model. Rather than relying exclusively on prohibition, policymakers should consider designing regulatory mechanisms that facilitate the integration of cryptocurrencies into the formal financial system while ensuring transparency, consumer protection, and financial stability. Such mechanisms may include enhanced monitoring systems, regulatory sandboxes, and stronger international cooperation to address cross-border regulatory challenges effectively.

Nevertheless, this study has certain limitations. Its reliance on secondary data and the absence of official statistics on cryptocurrency usage in Morocco restrict the scope for empirical validation. Future research could overcome these limitations by incorporating primary data, econometric modeling, or case-study approaches to deepen understanding of the relationship between cryptocurrencies and foreign exchange market dynamics.

In conclusion, cryptocurrency regulation in Morocco represents a major challenge at the intersection of financial innovation and regulatory governance. As digital assets continue to evolve, the effectiveness of regulatory responses will increasingly depend on their capacity to balance innovation with financial stability. A proactive, flexible, and forward-looking regulatory approach is therefore essential to maximize the benefits of blockchain technology while mitigating its associated risks.

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Appendix : Studies Included in PRISMA Analysis

No.	Author(s)	Year	Focus Area	Key Contribution
1	Narayanan et al.	2016	Blockchain	Foundational framework of Bitcoin
2	Yermack	2015	Monetary economics	Crypto as non-functional currency
3	Baur et al.	2018	Financial markets	Crypto as speculative asset
4	Corbet et al.	2019	Asset analysis	Volatility and financial behavior
5	Liu & Tsyvinski	2021	Asset pricing	Macro-financial determinants
6	Makarov & Schoar	2020	Crypto markets	Cross-border arbitrage
7	Auer & Claessens	2018	Regulation	Trade-off innovation vs stability
8	Arner et al.	2017	FinTech regulation	Evolution of regulatory frameworks
9	Adrian	2021	Macro-finance	Cross-border financial implications
10	BIS	2018	Financial stability	Crypto systemic risks
11	BIS	2023	Global finance	Market instability and risks
12	IMF	2023	Financial stability	Cryptoization risks
13	IMF	2022	Policy	Regulation in emerging markets

14	FSB	2023	Regulation	Global regulatory framework
15	Zetzsche et al.	2018	Legal studies	ICO regulation challenges
16	Cong et al.	2023	Tokenomics	Market structure dynamics
17	Frost et al.	2020	Financial systems	BigTech and financial change
18	Auer et al.	2022	Adoption	Crypto usage patterns
19	Auer et al.	2024	Cross-border flows	Crypto capital mobility
20	Koutmos	2018	Market behavior	Reaction to regulation
21	Gandal et al.	2018	Market manipulation	Price distortion
22	Griffin & Shams	2020	Market fraud	Bitcoin manipulation
23	Dyhrberg	2016	Finance	Bitcoin as hedge asset
24	Bouri et al.	2017	Portfolio	Diversification role
25	Cheah & Fry	2015	Speculation	Bubble dynamics
26	Urquhart	2016	Market efficiency	Inefficiency evidence
27	Hayes	2017	Mining economics	Cost structure
28	Catalini & Gans	2016	Blockchain economics	Cost reduction
29	Tapscott & Tapscott	2017	Digital economy	Blockchain transformation
30	UNCTAD	2022	Development	Crypto in developing countries
31	World Bank	2021	Finance	Digital finance risks
32	Chainalysis	2023	Adoption	Global crypto index
33	European Commission	2023	Regulation	MiCA framework
34	PwC	2023	Regulation	Global regulatory trends
35	OECD	2022	Policy	Crypto governance