

Central Bank Digital Currencies (CBDCs): Redefining Money and Banking

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Abstract

The emergence of central bank digital currencies (CBDCs) has prompted a fundamental reassessment of the architecture of modern monetary systems. Sweden's e-krona initiative occupies a particularly prominent position in this global debate: as one of the most cashless societies in the world, Sweden offers a uniquely instructive case through which to examine the economic and financial implications of retail CBDC adoption. This study investigates the potential effects of the e-krona on banking intermediation, monetary policy transmission, and financial stability in a highly digitalised, low-cash economy. Drawing on a qualitative-dominant mixed-methods design that combines systematic document analysis of Sveriges Riksbank publications with scenario-based assessment of commercial bank balance sheet data, the study finds that the e-krona is best understood as a strategic policy instrument aimed at preserving monetary sovereignty and payment-system resilience rather than as a short-term macroeconomic intervention. The analysis indicates that disintermediation risk, while real, remains manageable under the conservative design parameters—including holding limits, non-remunerative structures, and a two-tier distribution model—currently under consideration by the Riksbank. Direct effects on monetary policy transmission are expected to be limited in the near term; however, the e-krona may strengthen the long-run effectiveness of the interest rate channel by anchoring public trust in central bank money and introducing competitive pressure on private payment providers. Financial stability risks are identified primarily in stress scenarios, where the low-friction character of Sweden's digital payment infrastructure could accelerate deposit flight dynamics. The study concludes that the success of the e-krona will depend not only on sound technical design but on robust legal frameworks, iterative policy calibration, and sustained public engagement. The findings offer transferable insights for other advanced economies navigating the transition toward digital monetary systems.

Keywords: central bank digital currency, e-krona, Sveriges Riksbank, banking disintermediation, monetary policy transmission, financial stability, cashless economy, payment-system resilience

1. INTRODUCTION

The past decade has witnessed a profound transformation in how individuals and businesses conduct financial transactions. Across much of the developed world, physical cash has steadily given way to digital alternatives—contactless cards, mobile wallets, and real-time transfer applications—driven by technological advancement and shifting consumer behaviour (Bech & Garratt, 2017). Sweden offers perhaps the most striking illustration of this trend: cash now accounts for a negligible share of retail payments, and a growing number of merchants no longer accept banknotes at all (Sveriges Riksbank, 2018). While such developments have brought undeniable gains in speed and convenience, they have simultaneously exposed vulnerabilities in the existing payment architecture, including heightened dependence on privately operated platforms, concerns over financial exclusion among digitally marginalised populations, and the gradual erosion of the central bank's direct relationship with the public as the provider of everyday means of payment (BIS, 2021).

It is against this backdrop that central banks around the world have turned their attention to central bank digital currencies (CBDCs)—digital forms of sovereign money issued directly by a monetary authority and accessible to households and firms. Unlike privately issued stablecoins or cryptocurrencies, a retail CBDC carries the full credit of the state and is intended to function as a direct complement—or eventual partial successor—to physical cash. Proponents argue that a well-designed CBDC can safeguard monetary sovereignty, foster competition and innovation in retail payments, and ensure that all citizens retain access to a safe and universally accepted means of exchange (Bordo & Levin, 2017; BIS, 2020). Critics, however, caution that the introduction of a retail CBDC may disrupt commercial bank funding, alter established monetary policy transmission channels, and raise serious questions regarding data privacy and cybersecurity (Brunnermeier & Niepelt, 2019; Gorton & Metrick, 2017).

Sweden's central bank, Sveriges Riksbank, has been at the forefront of this global debate. Motivated by the country's unusually rapid shift away from cash, the Riksbank launched the e-krona project in 2017 to investigate whether a state-issued digital currency could fulfil the traditional functions of cash within a modern, digitalised payment ecosystem (Sveriges Riksbank, 2017). The e-krona initiative has since passed through multiple pilot phases, generating a body of technical and policy documentation that provides a rare empirical basis for evaluating the practical implications of CBDC design choices in a real-world context (Sveriges Riksbank, 2020).

Despite the growing volume of academic and policy-oriented literature on CBDCs, relatively few studies provide a focused, country-specific assessment that explicitly connects design parameters to the structural characteristics of a particular economy. Most existing contributions either develop abstract theoretical models or draw on cross-country comparisons that inevitably sacrifice contextual depth. Sweden's case is distinctive in ways that make it analytically valuable: it combines a highly advanced digital payments infrastructure, a concentrated banking sector, a well-developed legal and regulatory environment, and a central bank with an unusually long track record of engagement with CBDC experimentation. These features make the e-krona a particularly instructive case through which to examine the economic and financial implications of retail CBDC adoption.

This study is guided by the following research question: How might the introduction of a retail central bank digital currency—specifically Sweden's e-krona—affect banking intermediation, monetary policy

transmission, and financial stability in a highly digitalised, low-cash economy? To address this question, the analysis proceeds along three interrelated dimensions: the potential impact on commercial bank funding and the risk of disintermediation; the role of a retail CBDC in shaping monetary policy effectiveness in a cash-light environment; and the broader implications for payment-system resilience and financial stability. The paper draws on official Riksbank publications, pilot-programme documentation, macroeconomic data, and the wider academic literature to develop an integrated, context-sensitive assessment.

The contribution of this paper is twofold. First, it provides a structured synthesis of the e-krona initiative that links design choices—such as holding limits, remuneration structures, and the use of commercial intermediaries—to their expected economic consequences. Second, it situates Sweden's experience within the broader international CBDC landscape, identifying transferable lessons for other advanced economies confronting similar trends in cash decline and digital payment concentration. The remainder of the paper is organised as follows. Section 2 reviews the relevant academic and policy literature on CBDCs. Section 3 describes the research methodology. Section 4 presents the findings. Section 5 offers a discussion of the results, and Section 6 concludes with policy implications and directions for future research.

2. LITERATURE REVIEW

The academic literature on central bank digital currencies has expanded rapidly since the mid-2010s, reflecting both the growing policy salience of the topic and the proliferation of real-world CBDC experiments. What began as a largely theoretical debate has matured into a multi-disciplinary body of research spanning monetary economics, financial stability analysis, legal scholarship, and public policy. The following sub-sections organise this literature into four thematic areas that are directly relevant to the present study.

2.1 Conceptual Foundations and the Nature of CBDCs

Early contributions to the CBDC literature were primarily concerned with clarifying what a central bank digital currency is and how it relates to existing forms of money. The taxonomy proposed by Bech and Garratt (2017)—the so-called money flower—remains a widely cited reference point. Their framework distinguishes monetary instruments along four dimensions: the issuing entity, the form of the currency, accessibility, and the underlying transfer technology. A retail CBDC, by this classification, is a central-bank-issued, digital, universally accessible form of money—a combination that has no precise historical precedent, though it shares important features with both banknotes and reserve deposits.

Bordo and Levin (2017) argued that a CBDC could serve as a superior monetary instrument relative to both cash and commercial bank deposits, offering the safety of sovereign money alongside the transactional efficiency of digital payments. In a similar vein, Barrdear and Kumhof (2016) modelled the macroeconomic consequences of CBDC issuance in a dynamic general equilibrium framework, concluding that replacing a portion of government debt with a CBDC could reduce real interest rates and expand output by improving the allocative efficiency of the payment system. While subsequent scholarship has questioned some of the more optimistic assumptions embedded in these models, they established a productive analytical foundation for later empirical and policy-oriented work.

More recent contributions have shifted attention from the question of whether to issue a CBDC to the question of how it should be designed. Auer and Böhme (2020) provide a systematic treatment of the principal design choices facing CBDC architects, distinguishing between account-based systems—which require identity verification at the point of transaction—and token-based systems, which allow for a degree of anonymity comparable to physical cash. Each design approach entails distinct trade-offs with respect to privacy, security, financial inclusion, and regulatory compliance. The BIS (2020, 2021) has further articulated a set of foundational principles—including coexistence with cash, support for the two-tier banking system, and technological resilience—that have come to inform central bank practice in jurisdictions as varied as Sweden, China, and the euro area.

2.2 Banking Intermediation and Financial Stability

Among the most extensively debated implications of CBDC introduction is its potential effect on the commercial banking sector. The central concern is one of deposit substitution: if households and firms transfer funds from commercial bank accounts into CBDC holdings, banks may experience a contraction in their deposit base, which in turn constrains their capacity to extend credit to the broader economy (Brunnermeier & Niepelt, 2019). Fernández-Villaverde et al. (2021) formalise this mechanism in a theoretical model, demonstrating that the magnitude of disintermediation is highly sensitive to the design parameters of the CBDC—particularly whether it bears a positive interest rate and whether holding limits are imposed.

The financial stability implications extend beyond the funding structure of individual banks. In periods of financial stress, a readily accessible CBDC could serve as a flight-to-safety instrument, enabling depositors to convert bank balances into sovereign digital money at near-zero transaction cost. Keister and Sanches (2023) analyse this dynamic formally, showing that the availability of a CBDC can amplify the speed and severity of bank runs under certain conditions, even when the CBDC is designed with non-remunerative features intended to limit its attractiveness as a store of value. This concern has led most central banks—including the Riksbank—to favour designs that incorporate explicit holding caps and preserve a meaningful role for commercial intermediaries in the distribution of the CBDC (BIS, 2021; Sveriges Riksbank, 2020).

The two-tier model that has emerged as the dominant architectural preference in CBDC design reflects a deliberate effort to balance innovation with financial system continuity. Under this arrangement, the central bank issues the CBDC and maintains the core ledger, while licensed intermediaries—typically commercial banks or regulated payment service providers—are responsible for customer-facing functions including account opening, transaction processing, and compliance. Kumhof and Noone (2018) examine the balance-sheet implications of this model in detail, arguing that its viability depends critically on the terms under which the central bank provides backing liquidity to intermediaries. Brunnermeier et al. (2019) situate these considerations within the broader competitive dynamics between public and private digital money, anticipating a landscape in which CBDCs and privately issued stablecoins coexist and compete for transactional and store-of-value functions.

2.3 Monetary Policy Transmission

A second major strand of the literature examines how the existence of a CBDC might alter the transmission of monetary policy. In standard monetary frameworks, central bank policy rates influence economic activity indirectly, through their effect on commercial bank lending rates, asset prices, and exchange rate dynamics.

The introduction of a retail CBDC could modify this transmission in several ways, depending primarily on whether the CBDC is remunerated and how widely it is held.

If the CBDC pays interest, it creates a new and direct channel through which the central bank can influence the return on household liquid savings without the need for commercial bank intermediation. Bordo and Levin (2017) argue that this property could substantially strengthen the effectiveness of monetary policy, particularly in low-inflation environments where the zero lower bound on nominal interest rates constrains conventional tools. Engert and Fung (2017) develop a related argument in the Canadian context, suggesting that a remunerated CBDC could also facilitate the implementation of negative interest rate policies by eliminating the option of substituting into physical cash.

In Sweden's specific context, however, the Riksbank has consistently signalled that the e-krona is not intended as a monetary policy instrument per se, but rather as a payment infrastructure tool (Sveriges Riksbank, 2020). Because the e-krona is envisaged as non-remunerated—or remunerated only at a rate well below prevailing deposit rates—its direct effect on monetary policy transmission is expected to be limited in the near term. The more significant long-run effect may be indirect: by anchoring public confidence in central bank money in a cash-light environment, the e-krona may help preserve the effectiveness of the interest rate channel as the role of physical cash continues to diminish. Carstens (2021) emphasises this trust-preservation function as a central motivation for CBDC issuance across a range of jurisdictions.

2.4 Design Trade-offs, Governance, and International Experience

The most recent wave of CBDC scholarship has moved beyond theoretical modelling to engage with the practical and institutional dimensions of implementation. As documented by the BIS (2023), more than 130 countries representing approximately 98% of global GDP were actively researching or piloting CBDCs as of 2024. The diversity of these initiatives—spanning large economies such as China, India, and the euro area, as well as smaller jurisdictions such as the Bahamas and Nigeria—provides a growing empirical basis for comparative analysis.

China's digital yuan (e-CNY) represents the most advanced large-economy deployment to date, with pilot programmes reaching over 120 million wallets and generating transaction volumes in excess of seven trillion renminbi. The e-CNY's design prioritises state oversight and programmability at the expense of anonymity, a trade-off that has attracted criticism from privacy advocates but reflects the specific institutional priorities of the Chinese monetary system (BIS, 2021). By contrast, the European Central Bank's investigation of a digital euro has placed strong emphasis on privacy-preserving features and cross-border interoperability within the single market, reflecting both EU data protection norms and the multi-country governance challenges inherent in a shared currency area (ECB, 2022).

Across these varied experiences, several cross-cutting challenges have emerged. Governance and public trust consistently appear as critical determinants of adoption. Survey evidence compiled by the BIS (2023) indicates that fewer than half of respondents in surveyed countries express support for CBDC issuance, with low levels of public understanding cited as a primary barrier. Digital infrastructure maturity likewise shapes outcomes: jurisdictions with high existing penetration of mobile payment platforms tend to exhibit faster CBDC uptake, reflecting lower marginal costs of adoption for already-digitised users (World Bank, 2022). Finally, the absence of international technical standards creates persistent challenges for cross-border

payment interoperability, a concern that is particularly acute for small open economies whose payment systems are deeply integrated with those of their trading partners.

Taken together, this body of literature points to a recurring tension between the transformative potential of CBDCs and the institutional, behavioural, and technical conditions required to realise that potential safely. The present study contributes to this scholarship by examining how these general findings apply in the specific context of Sweden—an economy that combines an unusually advanced digital payment infrastructure with a highly concentrated banking sector and a central bank that has been actively engaged in CBDC experimentation for nearly a decade. By grounding the analysis in the structural characteristics of Sweden's financial system, the study aims to generate insights that are both internally coherent and relevant to the wider community of policymakers navigating the transition toward digital monetary systems.

3. METHODOLOGY

3.1 Research Design

This study employs a qualitative-dominant mixed-methods research design to investigate the potential economic and financial implications of Sweden's e-krona. The choice of a mixed-methods approach reflects the nature of the research problem: the e-krona has not yet been fully deployed, which means that conventional quantitative methods relying on post-implementation outcome data are not feasible. A design that combines systematic document analysis with scenario-based quantitative illustration is therefore both epistemologically appropriate and consistent with established practice in pre-implementation CBDC research (Yin, 2018; BIS, 2021).

The study is structured as a single-country case study, with Sweden selected on theoretical grounds. Case study methodology is particularly well suited to research questions that ask how and why a phenomenon operates within a specific context, and where the boundaries between the phenomenon and its setting are not sharply defined (Yin, 2018; Gerring, 2007). Sweden's selection is justified on two related grounds. First, as one of the most cashless societies in the world, Sweden provides an extreme-case illustration of the structural trends—declining cash usage, rising private-platform dominance, and growing central bank concern over monetary sovereignty—that motivate CBDC development across many advanced economies. Second, the Riksbank's decade-long e-krona programme has generated an unusually rich body of official documentation, pilot-programme reports, and technical working papers that makes rigorous document-based analysis possible. While the findings are interpreted with reference to the wider international CBDC literature, the study does not aim for statistical generalisation; rather, it pursues analytical generalisation—the identification of mechanisms and design principles that may inform comparable policy processes elsewhere (Yin, 2018).

3.2 Data Sources and Collection

The empirical basis of the study consists entirely of secondary data, a choice that reflects both the pre-implementation status of the e-krona and the transparency and replicability requirements of rigorous policy-oriented research. Data collection was guided by a systematic document review protocol covering materials published between January 2017—when the Riksbank formally launched the e-krona project—and December 2024. Four main source categories were consulted.

The primary source base comprises official publications of Sveriges Riksbank, including the two foundational e-krona project reports (2017, 2018), the Phase 1 and Phase 2 pilot documentation (2020, 2021), and subsequent technical and policy papers. These documents provide authoritative evidence on the Riksbank's stated objectives, design preferences, and assessments of risk. They are treated as primary empirical sources rather than merely as contextual background.

The second source category consists of balance sheet data and financial reports from Sweden's major commercial banks—Swedbank, SEB, Handelsbanken, and Nordea—obtained from publicly available annual reports and the Riksbank's financial stability reviews. These data are used to construct descriptive indicators of deposit funding reliance and potential disintermediation exposure. The third category encompasses macroeconomic statistics—including inflation rates, GDP growth, and short-term interest rates—drawn from Statistics Sweden (SCB) and the Riksbank's monetary policy reports. The fourth category comprises the academic and policy literature on CBDCs, monetary policy, and digital payments, retrieved from the Scopus, Web of Science, and JSTOR databases using a structured keyword search strategy (see Table 1).

Reference works in economics and monetary theory—including standard texts on money and banking—were consulted for conceptual grounding where appropriate, but are not treated as empirical sources and are not used to substantiate the study's principal claims.

Table 1. *Document Review Protocol*

Source Category	Key Sources	Time Span	Primary Use
Central bank publications	Sveriges Riksbank e-krona reports, pilot documentation, financial stability reviews	2017–2024	Design analysis, policy rationale
Commercial bank data	Annual reports; Riksbank FSR balance sheet data (Swedbank, SEB, Handelsbanken, Nordea)	2017–2024	Disintermediation exposure indicators
Macroeconomic statistics	Statistics Sweden (SCB); Riksbank monetary policy reports	2017–2024	Contextual indicators; scenario parameters
Academic literature	Scopus, Web of Science, JSTOR (keyword: CBDC, digital currency, monetary policy, banking stability)	2015–2024	Theoretical framing; comparative evidence
International CBDC	BIS Annual Economic	2020–2024	Cross-country

reports	Reports (2020, 2021, 2023); ECB digital euro investigation reports (2021, 2022)		comparison
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3.3 Analytical Framework

The analytical framework combines thematic content analysis with descriptive scenario-based quantitative assessment. These two components are applied sequentially and are designed to be mutually reinforcing: the qualitative analysis identifies the key transmission channels and policy mechanisms associated with e-krona adoption, while the quantitative component provides illustrative magnitudes that ground the qualitative claims in observable data.

The qualitative component follows the thematic analysis approach outlined by Braun and Clarke (2006), adapted to the document analysis context described by Bowen (2009). Documents were coded according to a predefined set of analytical categories derived deductively from the CBDC literature: monetary policy transmission mechanisms, banking-sector intermediation and deposit substitution dynamics, and financial stability and payment-system resilience. These categories were refined inductively as patterns emerged during the coding process. To enhance coding consistency, all documents were reviewed and coded independently by two members of the research team, with discrepancies resolved through discussion.

The quantitative component is explicitly descriptive and scenario-based rather than econometric. Drawing on the banking-sector balance sheet data described above, the study constructs three illustrative CBDC adoption scenarios—low, moderate, and high uptake—calibrated to the range of deposit substitution estimates reported in the academic literature (Brunnermeier & Niepelt, 2019; Fernández-Villaverde et al., 2021). For each scenario, the potential reduction in retail deposit funding and the associated increase in wholesale funding reliance are estimated for the major Swedish commercial banks. These calculations are presented as illustrative order-of-magnitude assessments rather than forecasts; they are intended to demonstrate the plausibility of the theoretical mechanisms identified in the qualitative analysis and to highlight the policy relevance of CBDC design choices such as holding limits and remuneration structures.

3.4 Validity, Reliability, and Ethical Considerations

Several measures were taken to enhance the rigour of the study. Internal validity was strengthened through source triangulation: all principal claims are supported by evidence drawn from at least two independent source categories (e.g., a Riksbank policy document and a peer-reviewed academic study), and instances of inconsistency across sources are explicitly noted rather than resolved by selecting the more convenient account. Construct validity was addressed by operationalising key concepts—such as disintermediation risk and payment-system resilience—in ways that are consistent with their usage in the established CBDC literature, thereby ensuring comparability with prior studies.

Reliability is supported by the transparency of the data collection protocol (Table 1) and the use of publicly available, institutionally verified sources that can be independently accessed and verified by other researchers. The coding framework used in the thematic analysis is documented in sufficient detail to allow

replication. Potential bias in the qualitative interpretation of policy documents—which may reflect the strategic communications objectives of their issuing institutions—is acknowledged explicitly; where the framing of official documents appears to diverge from the assessment offered in the academic literature, both perspectives are presented.

The study relies exclusively on publicly available documentary sources and involves no collection of personal data. No ethical approval was therefore required under the applicable institutional guidelines. All sources are cited in accordance with standard academic referencing conventions.

3.5 Limitations

The study is subject to three principal limitations that should be borne in mind when interpreting its findings. The most significant is the absence of post-implementation data. Because the e-krona has not yet been fully deployed, the analysis necessarily rests on design documentation, pilot-phase reports, and theoretical projections rather than observed behavioural outcomes. The scenario-based approach adopted here is a well-established response to this constraint in the pre-implementation CBDC literature (Auer & Böhme, 2020; BIS, 2021), but it does not permit causal inference, and actual adoption dynamics may differ substantially from those envisaged in current policy documents.

The second limitation concerns the scope of generalisation. Sweden's combination of near-universal digital payment penetration, a highly concentrated and well-capitalised banking sector, and a longstanding tradition of central bank independence makes it in several respects an outlier among advanced economies. Design choices and risk assessments that are appropriate in the Swedish context may not translate directly to jurisdictions with lower levels of digital infrastructure, less developed financial systems, or different institutional frameworks. Findings are therefore interpreted as context-specific insights that may inform—but should not be uncritically applied to—other national CBDC processes.

Third, the quantitative scenario analysis is illustrative rather than predictive. The deposit substitution estimates on which the scenarios are calibrated are drawn from theoretical models that necessarily simplify the complex behavioural and institutional dynamics of real-world CBDC adoption. The scenarios are designed to demonstrate the policy relevance of design parameters, not to provide precise numerical forecasts. Readers should treat the quantitative component of the analysis as a complement to—rather than a substitute for—the qualitative findings.

4. FINDINGS

This section presents the findings of the document analysis and scenario-based assessment in four thematic sub-sections, corresponding to the analytical categories identified in the methodology. The findings are organised around the study's central research question: how might the introduction of the e-krona affect banking intermediation, monetary policy transmission, and financial stability in Sweden's highly digitalised, low-cash economy? Each sub-section draws on the triangulated evidence base described in Section 3, combining Riksbank documentation, commercial bank balance sheet data, macroeconomic indicators, and the wider academic literature.

4.1 The Structural Drivers of Sweden's CBDC Agenda

The document analysis reveals that the Riksbank's motivation for developing the e-krona is primarily structural rather than conjunctural. The immediate catalyst is the exceptionally rapid decline in cash usage in Sweden. According to Riksbank payment surveys, the share of point-of-sale transactions conducted in cash fell from approximately 40 per cent in 2010 to below 10 per cent by 2020, with projections suggesting further contraction toward single-digit levels by the late 2020s (Sveriges Riksbank, 2020). This trajectory is substantially steeper than that observed in comparable advanced economies, including Denmark, Norway, and the Netherlands, and reflects a combination of factors: the widespread adoption of the Swish mobile payment application, aggressive merchant de-cashing, and a cultural preference for card and digital payments that predates the smartphone era.

This structural shift has generated two distinct but related policy concerns. The first is accessibility: as cash infrastructure—including ATM networks and bank branch services—contracts in response to declining demand, a growing segment of the population, including elderly citizens, individuals with limited digital literacy, and residents of rural areas, faces deteriorating access to publicly guaranteed means of payment. Riksbank documentation consistently frames the e-krona as a tool for preserving universal access to central bank money in a context where physical cash can no longer be relied upon to perform this function (Sveriges Riksbank, 2017, 2018).

The second concern is systemic. As cash withdraws, retail payment infrastructure becomes increasingly concentrated in the hands of a small number of private operators—principally the Swish consortium, the major card networks, and their associated clearing and settlement providers. The Riksbank's e-krona reports identify this concentration as a source of operational and strategic risk: a single point of failure in a dominant private platform could disrupt the entire retail payment system, while the absence of a public payment option reduces the Riksbank's ability to ensure competitive conditions and to maintain direct monetary relationships with households. These findings are consistent with the broader cross-country evidence on CBDC motivation reviewed by the BIS (2021), which identifies payment-system resilience and monetary sovereignty as primary drivers of CBDC interest among advanced-economy central banks.

4.2 E-Krona Design Features and Their Rationale

Analysis of the Riksbank's pilot documentation reveals a set of design choices that reflect a deliberate attempt to balance the objectives of payment modernisation against the imperative of financial system stability. Three design features are of particular analytical significance.

First, the e-krona is envisaged as a two-tier instrument, distributed through licensed commercial intermediaries rather than issued directly to the public by the Riksbank. Under this model, households and firms would hold e-krona in digital wallets provided and managed by commercial banks or authorised payment service providers, while the Riksbank would maintain the underlying infrastructure and serve as the ultimate issuer. This architecture preserves the customer-facing role of the commercial banking sector, thereby limiting the disintermediation risk identified in the theoretical literature (Auer & Böhme, 2020; Kumhof & Noone, 2018). It also allows the Riksbank to leverage existing know-your-customer and anti-money-laundering compliance infrastructure rather than building these capabilities from scratch.

Second, the Riksbank's pilot documentation signals a preference for non-remunerative or minimally remunerative e-krona holdings, at least in the initial implementation phase. By not paying interest on e-

krona balances—or by setting the rate well below prevailing deposit rates—the Riksbank aims to preserve the relative attractiveness of commercial bank deposits as a savings instrument, thereby limiting the scale of deposit substitution under normal conditions (Sveriges Riksbank, 2020). This design choice is consistent with the recommendations of Fernández-Villaverde et al. (2021), who demonstrate that remuneration structure is among the most powerful levers available to CBDC designers seeking to control disintermediation dynamics.

Third, the pilot programme has investigated offline functionality as a core design requirement. Unlike most existing digital payment instruments, which require network connectivity to function, the e-krona is intended to be operable in the absence of internet or mobile network coverage. This feature responds directly to the payment resilience rationale for CBDC issuance: in crisis scenarios involving infrastructure disruption—including cyber-attacks, natural disasters, or geopolitical incidents affecting digital networks—an offline-capable CBDC could serve as a payment backstop in a way that card and mobile payment systems cannot. Table 2 summarises the principal design features of the e-krona alongside their stated policy rationale and key design trade-offs.

Table 2. *E-Krona Design Features, Policy Rationale, and Associated Trade-offs*

Design Feature	Policy Rationale	Key Trade-off	Riksbank Position
Two-tier distribution (via commercial intermediaries)	Preserve banking sector role; leverage existing compliance infrastructure	Limits direct central bank-household relationship; intermediary failure risk	Favoured in all pilot phases
Non-remunerative or low-remuneration design	Limit deposit substitution; preserve bank funding stability	Reduces attractiveness as store of value; may limit adoption	Non-remuneration preferred for Phase 1
Offline functionality	Payment resilience in crisis scenarios; financial inclusion in low-connectivity areas	Technical complexity; heightened double-spending and fraud risk	Under active investigation in pilot
Holding limits (caps on individual e-krona balances)	Mitigate large-scale deposit flight; contain disintermediation risk	May constrain utility for larger transactions; cap level requires calibration	Included in design proposals; level not yet specified
Pseudonymous rather than fully anonymous	AML/CFT compliance; traceability for law enforcement	Privacy concerns; risk of public trust deficit	Cautious approach; privacy protections under legal review

Source: Authors' synthesis based on Sveriges Riksbank (2017, 2018, 2020, 2021) and BIS (2021).

4.3 Potential Effects on Banking Intermediation: Scenario Analysis

To assess the potential impact of e-krona adoption on Sweden's commercial banking sector, this study constructs three illustrative scenarios calibrated to deposit substitution estimates reported in the academic literature (Brunnermeier & Niepelt, 2019; Fernández-Villaverde et al., 2021). The scenarios differ in the assumed share of household retail deposits that migrates to e-krona holdings: 5 per cent (low adoption), 10 per cent (moderate adoption), and 20 per cent (high adoption). These parameters bracket the range of estimates considered plausible in comparable advanced economies, with the high-adoption scenario reflecting conditions in which design safeguards such as holding limits prove insufficient to contain deposit substitution.

Sweden's four major commercial banks—Swedbank, SEB, Handelsbanken, and Nordea—collectively held approximately SEK 3.2 trillion in retail deposits as of end-2023, representing roughly 45 per cent of their total funding base. Table 3 presents the estimated deposit outflow and associated increase in wholesale funding reliance under each scenario.

Table 3. *Illustrative Deposit Substitution Scenarios Under Alternative E-Krona Adoption Assumptions*

	Baseline (no CBDC)	Low Adoption (5%)	Moderate Adoption (10%)	High Adoption (20%)
Retail deposits (SEK bn)	3,200	3,040	2,880	2,560
Deposit outflow to e-krona (SEK bn)	—	160	320	640
Retail deposits as % of total funding	~45%	~42.8%	~40.5%	~36.0%
Estimated increase in wholesale funding reliance	—	Low	Moderate	Significant
Systemic stability assessment	Stable	Manageable	Manageable with design safeguards	Elevated risk; policy intervention warranted

Note: Deposit figures are approximate and based on publicly available Riksbank financial stability review data for end-2023. Scenario parameters are illustrative and calibrated to the range reported in Brunnermeier & Niepelt (2019) and Fernández-Villaverde et al. (2021). Figures should not be interpreted as forecasts.

The scenario analysis indicates that under low and moderate adoption conditions, the impact on bank funding structures is manageable, particularly if the Riksbank's proposed design safeguards—including holding limits and non-remunerative features—are effective in containing deposit substitution within the lower end of the estimated range. However, the high-adoption scenario reveals a more concerning picture: a deposit outflow of SEK 640 billion would represent a material contraction in the retail funding base of Sweden's major banks, potentially forcing a significant increase in reliance on wholesale market funding, which is both more expensive and more sensitive to changes in market sentiment. This finding underscores the importance of calibrating holding limits carefully and of maintaining the monitoring mechanisms needed to detect and respond to deposit migration dynamics in real time.

4.4 Monetary Policy and Financial Stability Implications

The document analysis indicates that the Riksbank does not envisage the e-krona as a primary monetary policy instrument in its initial implementation phase. The Riksbank's position, consistently maintained across its project reports, is that the e-krona should be understood as a payment infrastructure initiative rather than as an extension of the monetary policy toolkit. In a context where the policy rate is already transmitted primarily through the interbank market and the commercial bank lending channel—and where physical cash plays a negligible role in monetary dynamics—the introduction of a non-remunerative CBDC is unlikely to alter short-run inflation or output dynamics in a measurable way (Sveriges Riksbank, 2020).

Over a longer horizon, however, the findings point to two indirect channels through which the e-krona could influence monetary policy effectiveness. First, by providing a publicly guaranteed digital means of payment that competes with commercial bank deposits, the e-krona may exert downward pressure on the fees and spreads that banks charge for payment services, thereby improving the pass-through of policy rate changes to end-users. Second, and more fundamentally, the e-krona can serve a trust-anchoring function: in an environment in which the Riksbank's direct monetary relationship with the public is increasingly attenuated by the intermediation of private digital platforms, a state-issued CBDC reaffirms the central bank's role as the ultimate guarantor of the monetary system. This function is particularly relevant in a low-cash economy such as Sweden's, where the gradual disappearance of banknotes has eroded the most visible embodiment of that guarantee.

With respect to financial stability, the findings confirm the dual character of the e-krona as both a stabilising and a potentially destabilising instrument. Under normal conditions, the availability of a safe, government-backed digital payment option is expected to strengthen systemic resilience by reducing dependence on single points of failure in the private payment infrastructure. In stress scenarios, however, the ease with which depositors could shift funds from commercial bank accounts to e-krona holdings creates a potential mechanism for accelerated deposit flight, as discussed in the scenario analysis above. The Riksbank's acknowledgement of this risk—and its preference for conservative design parameters in the initial implementation phase—reflects a cautious institutional judgement that the stabilising benefits of the e-krona are best realised gradually, with continuous monitoring of adoption dynamics and deposit market trends.

Table 4 synthesises the principal findings across the four analytical dimensions examined in this section.

Table 4. *Summary of Findings Across Analytical Dimensions*

Analytical Dimension	Principal Finding	Key Conditioning Factors	Policy Implication
Structural drivers	Rapid cash decline and private-platform concentration are primary motivations for e-krona development	Pace of cash withdrawal; Swish market dominance	Urgency of providing a public digital payment backstop
CBDC design	Two-tier, non-remunerative design with offline capability reflects stability-first approach	Holding limit calibration; legal framework readiness	Design parameters must be reviewed iteratively as adoption data emerge
Banking intermediation	Low-to-moderate adoption manageable; high adoption poses elevated funding risk for major banks	Effectiveness of holding limits; household portfolio behaviour	Real-time monitoring of deposit dynamics; contingency funding plans
Monetary policy	Limited short-run transmission effects; longer-run trust-anchoring and competition-enhancing benefits	Remuneration structure; scale of adoption	Non-remunerative design appropriate for Phase 1; reassess as market structure evolves
Financial stability	Stabilising under normal conditions; accelerated deposit flight risk under stress	Adoption speed; crisis scenario characteristics	Phased implementation; stress-testing of CBDC-inclusive scenarios

Source: Authors' synthesis based on Sveriges Riksbank reports (2017–2024), BIS publications, and reviewed academic literature.

5. DISCUSSION

This section situates the findings of the study within the wider academic and policy literature on CBDCs, examining the extent to which Sweden's experience confirms, qualifies, or challenges prevailing theoretical expectations. The discussion is organised around four interrelated dimensions: the implications for banking intermediation, the effects on monetary policy transmission, the dual character of the e-krona as a financial stability instrument, and the cross-cutting challenges of legal readiness and international context.

5.1 Banking Intermediation: Theoretical Expectations and Swedish Evidence

The concern that CBDC adoption could undermine commercial bank funding by displacing retail deposits is among the most extensively theorised risks in the CBDC literature. Brunnermeier and Niepelt (2019) demonstrate formally that, under certain conditions, the substitution of bank deposits for central bank digital money need not reduce the overall volume of credit in the economy, provided that the central bank passes liquidity through to commercial banks on equivalent terms. Fernández-Villaverde et al. (2021) qualify this result, showing that the neutrality conclusion is sensitive to assumptions about the remuneration structure of the CBDC and the responsiveness of households to yield differentials between CBDC holdings and bank deposits.

The scenario analysis conducted in this study broadly supports the view that disintermediation risk is real but manageable under the design parameters currently under consideration by the Riksbank. The finding that a 5 to 10 per cent substitution of retail deposits produces a funding contraction that Sweden's well-capitalised major banks could absorb without systemic distress is consistent with the conditional optimism expressed in recent BIS assessments (BIS, 2021). The more cautionary finding—that a 20 per cent substitution rate would generate a deposit outflow large enough to materially increase wholesale funding reliance—adds empirical texture to the theoretical warning issued by Keister and Sanches (2023), who demonstrate that the stability implications of CBDC adoption are non-linear and become acute beyond certain adoption thresholds.

What the Swedish case adds to this theoretical picture is a structural dimension that generic models tend to understate. Sweden's banking sector is unusually concentrated: the four major institutions account for the overwhelming majority of retail deposit funding, and smaller regional banks have limited capacity to absorb funding shocks through market access. This concentration means that even a moderate aggregate deposit outflow could be distributed unevenly across institutions, creating pockets of elevated vulnerability that would not be apparent from sector-wide averages. This consideration reinforces the case for graduated holding limits calibrated not only to system-wide deposit dynamics but also to the funding profiles of individual institutions, a point underscored by Kumhof and Noone (2018) in their analysis of CBDC balance sheet implications.

5.2 Monetary Policy Transmission: Indirect Effects and Long-Run Implications

The finding that the e-krona is unlikely to alter short-run monetary policy dynamics aligns with the emerging consensus in the literature that the monetary policy implications of a non-remunerative retail CBDC in a low-cash economy are limited in the near term (Carstens, 2021; Sveriges Riksbank, 2020). The more consequential question—which this study approaches from a longer-run perspective—concerns how the structural changes set in motion by CBDC adoption might gradually modify the monetary transmission environment.

Two indirect channels identified in the findings merit particular attention. The first is the competitive channel: the availability of a publicly provided digital payment option creates a benchmark against which private payment providers must price their services, potentially compressing the margins that currently characterise Sweden's oligopolistic retail payment market. To the extent that these margins represent a monetary friction—a wedge between the policy rate and the effective cost of transacting for households—their compression would improve the pass-through of monetary policy decisions to end-users. This argument builds directly on Bordo and Levin (2017), who identify the elimination of monetary frictions as a

central macroeconomic benefit of CBDC issuance, and is reinforced by Barrdear and Kumhof (2016), whose general equilibrium model projects significant output gains from improved payment system efficiency following CBDC introduction.

The second channel is what might be termed the trust channel. In a cashless economy, the central bank's most visible instrument for affirming its role as the guarantor of monetary stability—the banknote—gradually disappears from everyday life. Banknotes are not merely a means of payment; they are a tangible expression of the state's monetary commitment, and their withdrawal from circulation creates both a functional and symbolic gap in the central bank's relationship with the public. As Carstens (2021) emphasises, CBDCs can serve a trust-preservation function that extends well beyond their direct transactional utility, reaffirming the central bank's presence in the monetary system at a moment when privately issued digital alternatives are proliferating. This dimension is directly relevant to Sweden, where the pace of cash withdrawal has been faster than in almost any other advanced economy.

5.3 Financial Stability: Managing the Dual Character of the E-Krona

The finding that the e-krona is simultaneously a stabilising and a potentially destabilising instrument reflects a tension that runs through the broader CBDC literature and has not yet been satisfactorily resolved. On the stabilising side, a government-backed digital payment instrument that operates on infrastructure independent of private commercial platforms provides a genuine backstop for retail payment continuity in scenarios where private systems fail. This resilience argument is central to the Riksbank's own justification for the e-krona project and is consistent with the BIS (2021) assessment that payment-system resilience is one of the strongest motivations for CBDC issuance in advanced economies.

On the destabilising side, the digital bank run mechanism identified by Keister and Sanches (2023) is particularly salient in the Swedish context. The ease and speed with which Swedish consumers already transfer funds between digital accounts—demonstrated by the near-instantaneous settlement times of the existing Swish platform—means that the friction costs that historically slowed deposit flight in times of financial stress are largely absent. In a scenario in which confidence in a particular commercial bank deteriorates, the ability to shift funds into e-krona at near-zero cost and near-zero delay could accelerate run dynamics to a degree not previously observed in the Swedish financial system. Brunnermeier et al. (2019) highlight a related concern at the international level, noting that the availability of foreign CBDCs as flight-to-safety instruments could amplify currency substitution pressures on smaller open economies during periods of global financial stress—a risk that is non-trivial for Sweden given its deep integration into European financial markets.

The Riksbank's response to this tension—a conservative, stability-first design philosophy centred on holding limits, non-remunerative structures, and phased deployment—is defensible on precautionary grounds and consistent with the approach taken by most other advanced-economy central banks (BIS, 2021; Auer & Böhme, 2020). However, this approach entails a genuine trade-off: a heavily constrained e-krona may offer limited incremental value to consumers who already have access to fast and reliable private digital payment options, reducing adoption incentives and thereby undermining the instrument's ability to fulfil its own objectives. The implication is that the design parameters of the e-krona should not be treated as fixed choices made once at the point of deployment, but as adjustable instruments to be calibrated iteratively in

response to observed adoption dynamics, changes in the competitive structure of the payment market, and shifts in the broader macroeconomic environment.

5.4 Legal Readiness and the International Context

The financial stability discussion cannot be separated from the question of legal and regulatory readiness, which the findings identify as a critical precondition for successful e-krona deployment. The legal status of the e-krona under Swedish and European Union law remains incompletely resolved. Key questions—including whether e-krona holdings constitute a direct claim on the Riksbank, how the instrument is treated for the purposes of deposit guarantee schemes and bank capital regulation, and how transaction data are governed under the EU General Data Protection Regulation—will need to be addressed through legislation before full deployment can proceed. Auer and Böhme (2020) emphasise that these legal ambiguities are not merely administrative hurdles; unresolved questions about the rights and obligations associated with CBDC holdings can undermine public trust and slow adoption regardless of the technical quality of the underlying system.

The international dimension of the e-krona project is equally significant. As of 2024, more than 130 countries representing approximately 98 per cent of global GDP are actively researching or piloting CBDCs (BIS, 2023). The European Central Bank's digital euro investigation is particularly relevant for Sweden, given the country's deep integration into European payment infrastructure. While Sweden retains its own currency outside the euro area, the technical and regulatory standards that emerge from the digital euro process will inevitably shape the interoperability requirements that the e-krona must meet to function effectively in cross-border payment contexts (ECB, 2022). Engaging proactively with these multilateral processes would strengthen both the operational effectiveness of the e-krona and Sweden's broader influence over the governance of digital monetary infrastructure in Europe.

Table 5. Discussion Summary: Theoretical Debates, Swedish Evidence, and Policy Implications

Dimension	Key Theoretical Debate	Swedish-Specific Evidence	Principal Policy Implication
Banking intermediation	Neutrality of deposit substitution (Brunnermeier & Niepelt, 2019) vs. non-linear instability risk (Keister & Sanches, 2023)	Sector concentration amplifies uneven distribution of funding shocks; smaller banks disproportionately exposed	Holding limits calibrated to institution-level funding profiles, not only system-wide averages
Monetary policy transmission	Direct transmission via remuneration (Bordo & Levin, 2017; Barrdear & Kumhof, 2016) vs. indirect structural effects (Carstens, 2021)	Competitive and trust channels more relevant than direct rate channel under non-remunerative design	Monetary policy benefits accrue gradually; remuneration design should be reassessed as market structure

			evolves
Financial stability	CBDC as payment backstop vs. accelerant of bank runs (BIS, 2021; Keister & Sanches, 2023; Brunnermeier et al., 2019)	Low transaction friction in Swedish digital payments heightens run-acceleration risk under stress	Design parameters must remain adjustable; stress-testing frameworks should incorporate CBDC scenarios
Legal and international context	Regulatory fragmentation vs. cross-border harmonisation (Auer & Böhme, 2020; BIS, 2023; ECB, 2022)	EU legal and technical standards will constrain e-krona design space and interoperability requirements	Legal framework development and EU engagement should proceed in parallel with technical piloting

Source: Authors' synthesis based on cited literature and Riksbank documentation.

6. CONCLUSION

6.1 Principal Findings

This study set out to examine how the introduction of Sweden's e-krona might affect banking intermediation, monetary policy transmission, and financial stability in a highly digitalised, low-cash economy. Drawing on a systematic analysis of Riksbank documentation, commercial bank balance sheet data, macroeconomic indicators, and the academic literature, the study has generated findings that are both internally coherent and relevant to the broader international CBDC debate.

With respect to the structural drivers of the e-krona initiative, the analysis confirms that the Riksbank's agenda is motivated primarily by the exceptionally rapid decline in cash usage in Sweden and the associated concentration of retail payment infrastructure in the hands of a small number of private operators. In this context, the e-krona is best understood not as a technological innovation for its own sake, but as a strategic policy instrument designed to preserve the central bank's capacity to provide a universally accessible, publicly guaranteed means of payment in an environment where physical cash can no longer reliably fulfil that function (Sveriges Riksbank, 2017, 2020).

On banking intermediation, the scenario analysis indicates that the magnitude of disintermediation risk depends critically on the design parameters of the e-krona—particularly the level of holding limits and whether the CBDC bears any interest. Under low and moderate adoption scenarios, calibrated to a 5 and 10 per cent substitution of retail deposits respectively, the impact on the funding structures of Sweden's major commercial banks appears manageable, provided that the Riksbank's proposed safeguards remain effective. However, a high-adoption scenario involving a 20 per cent deposit substitution rate would produce an outflow of approximately SEK 640 billion—a contraction large enough to materially increase wholesale funding reliance and elevate systemic liquidity risk. These findings are consistent with the non-linearity

argument advanced by Keister and Sanches (2023) and underscore that the boundary between manageable and elevated risk is not fixed, but depends on the interaction between design choices, household behaviour, and market conditions.

Regarding monetary policy transmission, the study finds that the e-krona is unlikely to exert significant direct effects on interest rates or inflation dynamics in the near term, given the Riksbank's preference for a non-remunerative design in the initial phase. The more significant monetary policy implications are indirect and longer-run: by anchoring public confidence in central bank money and by introducing competitive pressure on private payment providers, the e-krona may gradually strengthen the effectiveness of the interest rate channel and improve policy pass-through to end-users, in line with the efficiency gains projected by Bordo and Levin (2017) and Barrdear and Kumhof (2016).

On financial stability, the findings confirm a pattern consistent with the broader literature: the e-krona is simultaneously a stabilising and a potentially destabilising instrument, depending on the conditions under which it is adopted and used. Under normal conditions, the availability of a government-backed digital payment option enhances systemic resilience by reducing dependence on private platform infrastructure. Under stress conditions, the convertibility of bank deposits into e-krona creates a potential channel for accelerated deposit flight, a risk that is particularly acute in Sweden given the near-frictionless character of its existing digital payment infrastructure (Keister & Sanches, 2023; BIS, 2021).

6.2 Theoretical and Policy Contributions

The study makes two principal contributions. The first is analytical: by constructing an explicit scenario-based assessment of deposit substitution dynamics calibrated to real Swedish banking sector data, the paper moves beyond the largely theoretical treatment that has dominated the CBDC literature and provides a concrete, country-specific illustration of how design choices translate into financial stability outcomes. This contributes to the growing body of work calling for more context-sensitive CBDC assessments that take into account the structural characteristics of individual economies rather than relying on stylised general equilibrium models (Fernández-Villaverde et al., 2021; Auer & Böhme, 2020).

The second contribution is synthetic: by integrating official Riksbank documentation, commercial bank data, and the academic literature into a single analytical framework, the study offers a more comprehensive assessment of the e-krona initiative than has previously been available. In particular, the paper's explicit treatment of the three-way tension between payment system modernisation, banking sector stability, and monetary sovereignty—and its demonstration that this tension can be managed through appropriate design choices—provides a reference point for policymakers in other advanced economies confronting similar structural trends.

From a policy perspective, the findings support three broad recommendations. First, the Riksbank should proceed with e-krona development on a phased and iterative basis, with holding limits and remuneration parameters reviewed regularly in light of observed adoption dynamics rather than fixed at pre-implementation levels. Second, the development of a robust legal framework—encompassing data protection, AML/CFT compliance, and the precise legal status of the e-krona—should be treated as a precondition for full deployment rather than a parallel workstream, as emphasised by Auer and Böhme (2020). Third, Sweden's advanced position in the international CBDC landscape gives the Riksbank a

distinctive opportunity to contribute to the development of cross-border interoperability standards, particularly in the context of the ECB's ongoing digital euro investigation (ECB, 2022).

6.3 Limitations

The conclusions of this study should be read in light of its principal limitation: the analysis rests on design documentation and pilot-phase evidence rather than post-implementation outcome data. The e-krona remains an experimental instrument, and actual adoption patterns and banking sector adjustments may differ substantially from the scenarios examined here. The scenario-based quantitative component is illustrative rather than predictive; actual magnitudes will depend on behavioural and institutional dynamics that cannot be fully anticipated in advance. Additionally, Sweden's combination of near-universal digital payment penetration and a concentrated, well-capitalised banking sector makes it in several respects an outlier among advanced economies, and design conclusions appropriate in the Swedish context may not translate directly to jurisdictions with different institutional characteristics.

7. FUTURE RESEARCH

The findings and discussion of this study point to a number of substantive directions for future research, organised below according to their methodological character.

7.1 Post-Implementation Empirical Analysis

The most significant constraint on the present study—and on the broader pre-implementation CBDC literature—is the absence of observed outcome data. As the Riksbank's e-krona programme progresses from pilot to deployment, a first priority for future research will be empirical analysis based on actual usage patterns, adoption rates, and market responses. Transaction-level data from the e-krona platform could be used to examine the degree to which households substitute e-krona for bank deposits or for cash, the demographic and geographic distribution of uptake, and the response of commercial bank funding costs to observed deposit migration. Such analyses would enable the scenario parameters employed in this study to be tested against real-world evidence and would support more precise calibration of holding limits and remuneration structures (Yin, 2018; BIS, 2021).

7.2 Distributional and Financial Inclusion Effects

A question that is theoretically central to the CBDC debate but remains empirically underexplored is whether retail CBDCs deliver meaningful financial inclusion benefits or primarily serve populations that are already well-integrated into the digital economy. Household-level survey and administrative data could be used to examine how different socioeconomic groups—including elderly citizens, individuals with limited digital literacy, and residents of areas with limited banking access—adopt and use the e-krona in practice. These analyses would clarify whether the financial inclusion rationale for CBDC issuance is substantiated by observed behaviour, and would help policymakers design complementary measures to ensure that the instrument's benefits are broadly distributed. The World Bank (2022) has highlighted digital infrastructure maturity as a key determinant of CBDC adoption outcomes, but distributional effects within economies remain poorly understood.

7.3 Stress-Testing and Systemic Risk Modelling

The financial stability implications of CBDC adoption under stress conditions represent a domain in which the present study's scenario-based approach reaches its natural limits. Future research could employ agent-based models or formal stress-testing frameworks to simulate bank run dynamics in a CBDC-inclusive financial system, examining how the speed and scale of deposit flight respond to variation in holding limits, remuneration structures, and the severity of the underlying shock. Such models could also be used to identify quantitative triggers—defined in terms of daily deposit outflow rates or e-krona balance growth—that would prompt pre-specified policy responses, strengthening the Riksbank's capacity to manage adoption dynamics in real time. This line of research would complement the exploratory scenario analysis presented here with a more rigorous quantitative foundation, building on the stress-testing frameworks advocated by Keister and Sanches (2023) and Fernández-Villaverde et al. (2021).

7.4 Legal and Regulatory Comparative Research

The legal and regulatory dimensions of CBDC implementation remain systematically underexplored relative to their economic and technical counterparts. Comparative legal research examining how different jurisdictions have resolved questions of CBDC legal status, data governance, and central bank mandate compatibility would provide valuable guidance for the Riksbank as it navigates the Swedish and EU regulatory environments. Of particular interest is the tension between GDPR privacy requirements and the AML/CFT traceability demands associated with a state-issued digital currency—a tension that Auer and Böhme (2020) identify as one of the most difficult design trade-offs in retail CBDC architecture. This research agenda has direct practical relevance for the digital euro project, where similar tensions are playing out at the supranational level (ECB, 2022).

7.5 Cross-Border Interoperability and International Monetary Implications

Finally, the international dimensions of CBDC development remain among the least well-understood aspects of what is otherwise a rapidly maturing research field. For Sweden, the most pressing interoperability questions concern the relationship between the e-krona and the digital euro—both in terms of technical compatibility and governance arrangements for cross-border transactions. More broadly, the proliferation of national CBDC projects raises the possibility of significant changes to the architecture of the international monetary system, including new forms of currency competition, shifts in the role of correspondent banking in cross-border payments, and potential geopolitical implications of CBDC-enabled payment corridors (Brunnermeier et al., 2019; BIS, 2023). Coordinated multi-country research efforts—ideally involving collaboration between central banks, academic institutions, and international organisations—will be needed to address these questions in a manner that reflects the interdependencies of the global monetary system rather than treating each national CBDC initiative in isolation.

Taken together, these research directions reflect the reality that CBDCs remain a genuinely open policy experiment. The value of Sweden's e-krona initiative lies not only in what it may ultimately achieve as a payment instrument, but in what it can teach the international community about the conditions under which the transition to digital sovereign money can be managed safely, equitably, and effectively. Realising that educational value will require sustained investment in rigorous, interdisciplinary, and internationally coordinated research of the kind outlined above.

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