

THE BITCOIN LENDING STANDARDS OF 2026

Bitcoin is ready to enter the \$130 trillion fixed income market

Institutional-grade collateral outside the banking system

January 2026

Foreword

This paper is written in my capacity as a Bitcoin Strategy Advisor at Blockrise, but more importantly, as Johan Dourleijn, an individual who has spent years navigating traditional finance, Bitcoin markets and investing experience. Together with co-writer Max Geerdink, Portfolio Manager at Blockrise we compiled this paper. What follows is not purely academic research. It is shaped by personal experience, including the risks I have witnessed and encountered firsthand in the early years of Bitcoin-backed lending. For those unfamiliar with some of the financial or Bitcoin terms, I've included a glossary in Appendix E and for source references, please refer to Appendix F. The expressed views in this paper are the view of the writers and do not necessarily reflect the views of Blockrise.

My purpose in writing this paper is twofold. First, I want both lenders and borrowers to understand what the risks were, what they still are, and where the opportunity lies. Second, I want to provide the framework for responsible participation in a market that holds extraordinary potential, but only for those who approach it with discipline and understanding.

There is a narrative in the Bitcoin community that has always made me uncomfortable when expressed without nuance: "With Bitcoin-backed lending, you never have to sell your Bitcoin." On the surface, this sounds liberating. But it sits uncomfortably close to another truth: "Leverage creates forced sellers." The difference between financial freedom and financial destruction lies entirely in how the mechanism is structured.

This is not unique to Bitcoin. Throughout financial history, people have lost their homes, their businesses, and their life savings to instruments that appeared risk-free in rising markets but proved devastating when conditions turned. The 2008 mortgage crisis, the dot-com collapse, the 1929 crash. In each case, leverage that seemed manageable in good times became catastrophic under stress. Bitcoin-backed lending is no different. The asset may be new, but the mechanics of risk are timeless.

My goal is to give readers a clear view of several things: where the opportunity lies for both lenders and borrowers; what is required to properly value Bitcoin as collateral; which hurdles must still be overcome before this market reaches the mainstream; and critically, what can go wrong and how to prevent it.

We do not need to fear Bitcoin-backed lending. We need to understand it. And with understanding comes the ability to participate responsibly in what may become one of the most significant developments in modern credit markets.

Johan Dourleijn , January 2026

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1. Introduction

The opportunity gap

The global fixed-income market represents approximately \$130 trillion in assets under management. This includes government bonds, corporate debt, mortgage-backed securities, and other credit instruments that form the backbone of institutional portfolios worldwide.

Meanwhile, the Bitcoin-backed lending market in 2025 reached \$74 billion in total volume.¹ This comprises \$24 billion in centralized finance (CeFi), the institutional segment where regulated platforms provide loans to verified borrowers, and approximately \$50 billion in decentralized finance (DeFi) protocols operating on blockchain networks.

The CeFi segment of \$24 billion represents the institutional gateway to traditional finance. These are platforms with compliance frameworks, custody solutions, and risk management practices that institutional investors can evaluate and trust. A mere 1% allocation from the fixed-income market would represent 54 times the current institutional Bitcoin-backed lending market. This is not a speculative projection but a measure of the structural opportunity that exists.

The two blockers

Two forces are currently slowing institutional adoption of Bitcoin as collateral:

1. Regulatory barriers (banking-specific)

Basel III/IV regulations impose a 1,250% risk-weighting on Bitcoin exposures.² To understand what this means in practice: if a bank wants to hold €1 million in Bitcoin-collateralized loans on its balance sheet, it must set aside €1 million in capital, the full value of the exposure. Compare this to a residential mortgage, which requires only €22,400 in capital for the same €1 million exposure. This makes Bitcoin-backed lending economically unviable for traditional banks operating under Basel rules. For a detailed breakdown of these capital requirements, see Appendix A.

However, family offices, private debt funds, and non-bank lenders are not bound by Basel constraints. These entities can evaluate Bitcoin on its merits rather than regulatory classifications, and they are actively bridging the gap that banks cannot yet cross.

2. Philosophical risk assessment (universal)

Traditional credit risk assessment frameworks were designed for assets with stable cashflows (like rental income from real estate), long track records (like 100+ years of stock market data), and strong legal anchoring (like property titles registered with government authorities). Bitcoin fits none of these categories, and therefore scores poorly on traditional scorecards.

This philosophical barrier applies to all market participants, including family offices and debt funds. Overcoming it requires a willingness to evaluate collateral through a new lens; one that values transparency, programmability, instant liquidity, and digital verifiability. Chapter 6 explores this shift in perspective in detail.

The thesis

The question is no longer whether Bitcoin qualifies as bank-grade collateral. The institutional entrance in 2025 including moves by JPMorgan, Goldman Sachs, Cantor Fitzgerald, and others has validated the market. Strategy (formerly MicroStrategy) received a B- issuer credit rating with a stable outlook from S&P Global³, becoming the first Bitcoin-focused company to achieve a rating.

The question is how quickly institutions will adapt their frameworks to recognize what the market has already proven. This paper provides the analysis, evidence, and framework to accelerate that understanding.

What this paper covers

This paper examines the Bitcoin-backed lending market through multiple lenses. Chapter 2 explores market drivers and the potential upside, with detailed scenario analysis in Appendix B. Chapter 3 provides an honest assessment of risks and historical lessons. Chapter 4 establishes the gold standard for prudent lending practices, with supporting calculations in Appendix C. Chapter 5 analyzes Bitcoin's unique properties as collateral, with monetary data in Appendix D. Chapter 6 compares Bitcoin against traditional assets using two distinct evaluation frameworks. Chapter 7 concludes with a view on emerging products and the opportunity ahead. Appendix E provides a glossary of terms for readers less familiar with Bitcoin or lending terminology.

2. The explosion of Bitcoin-backed lending: drivers and potential upside

The five drivers

1. No sale, no tax

In jurisdictions where capital gains are taxed upon realization, selling Bitcoin triggers a taxable event. An investor who purchased Bitcoin at \$10,000 and sells at \$100,000 may owe taxes on the \$90,000 gain, depending on jurisdiction and holding period. By borrowing against Bitcoin instead of selling, investors defer these tax obligations indefinitely while accessing the same liquidity. The tax efficiency compounds over time, particularly for long-term holders with significant unrealized gains. Borrowers should confirm this treatment applies in their specific jurisdiction before implementing this strategy.

2. Liquidity without selling

Companies and high-net-worth individuals often need capital for specific purposes: financing business growth, acquiring real estate, making strategic investments, or managing cash flow. Bitcoin-backed lending allows access to this capital without reducing Bitcoin exposure. The collateral remains intact; only liquidity changes hands. For those with conviction in Bitcoin's long-term value proposition, this preserves upside potential while meeting immediate needs.

3. Save in scarcity, spend in inflation

Bitcoin is the only asset with programmed absolute scarcity: there will never be more than 21 million coins. This is enforced by the network's code and verified by thousands of computers worldwide. Compare this to fiat currencies, which central banks can create without limit. The US Dollar money supply (M2) has expanded by approximately 6-7% annually in recent years. For detailed monetary comparisons, see Appendix D.

By borrowing fiat currency against Bitcoin collateral, investors effectively spend a depreciating currency while holding an appreciating asset. This represents a form of monetary arbitrage, though the strategy's success depends entirely on Bitcoin's actual long-term performance.

4. Institutional validation

Strategy (formerly MicroStrategy) received a B- issuer credit rating with a stable outlook from S&P Global in October 2025³, the first Bitcoin-focused company to achieve a rating. This was not charity. S&P analysts evaluated the company's balance sheet, cash flows, and risk profile using the same criteria applied to traditional corporations.

Subsequently, JPMorgan, Goldman Sachs, Cantor Fitzgerald, Tether, and Morgan Stanley all launched or expanded Bitcoin credit products. Bitcoin ETFs now hold over \$110 billion in assets under management⁹. These institutions do not enter markets casually; it takes years of preparation before entering. Their participation signals that internal risk committees, compliance departments, and legal teams have approved Bitcoin as a viable asset class.

5. Asymmetric upside potential

At a conservative 30% loan-to-value ratio, borrowers can access liquidity while retaining significant upside exposure. If Bitcoin appreciates, the loan becomes proportionally smaller relative to collateral value. If Bitcoin doubles, a 30% LTV becomes effectively 15%; the borrower could repay the entire loan by selling a small fraction of their holdings and keep the rest as profit. It is more common for the loan to be rolled over at maturity date.

The scenario analysis below demonstrates this asymmetry under different growth assumptions, including a bear case that illustrates the risks. For complete calculation methodology, see Appendix B.

Scenario analysis

The following analysis demonstrates potential outcomes for a Bitcoin-backed loan under different growth assumptions, including a bear case showing what happens when severe corrections occur. All calculations assume a 5-year holding period.

Assumptions:

Parameter	Value
Starting BTC Price	\$100,000
Loan Amount	\$30,000
LTV Ratio	30%
Interest Rate	8% (compounded annually)
Time Horizon	5 years
Direct Sale Alternative	Sell 0.30 BTC immediately for \$30,000

Table 1: Assumptions used for Bitcoin-backed loan calculations in the following scenario's.

Scenario outcomes:

Scenario	Pattern	BTC 2030	Loan Bal.	BTC to Repay	BTC Left	vs Sale
Bear Case	+15%, -60%, +15% CAGR	\$69,960	\$44,080	0.630 BTC	0.370 BTC	-0.330
Conservative	+15% CAGR	\$201,135	\$44,080	0.219 BTC	0.781 BTC	+0.081
Realistic	+30% CAGR	\$371,293	\$44,080	0.119 BTC	0.881 BTC	+0.181
Historical	+60% CAGR	\$1,048,576	\$44,080	0.042 BTC	0.958 BTC	+0.258

Table 2: Scenario comparison showing BTC-backed loan outcomes versus direct sale of 0.30 BTC. The "vs Sale" column shows how much additional (or less) Bitcoin the borrower retains compared to simply selling upfront. Complete calculations in Appendix B

Bear case analysis: Why LTV management matters

The Bear Case demonstrates what happens when a severe correction occurs early in the loan term. Let us trace through the scenario year by year:

Moment	BTC Price	Collateral Value	Loan Balance	LTV	Status
Start	\$100,000	\$100,000	\$30,000	30%	Healthy
End Year 1	\$115,000	\$115,000	\$32,400	28%	Healthy
End Year 2 (crash)	\$46,000	\$46,000	\$34,992	76%	Margin Call
End Year 3	\$52,900	\$52,900	\$37,791	71%	At Risk
End Year 5	\$69,960	\$69,960	\$44,079	63%	Moderate

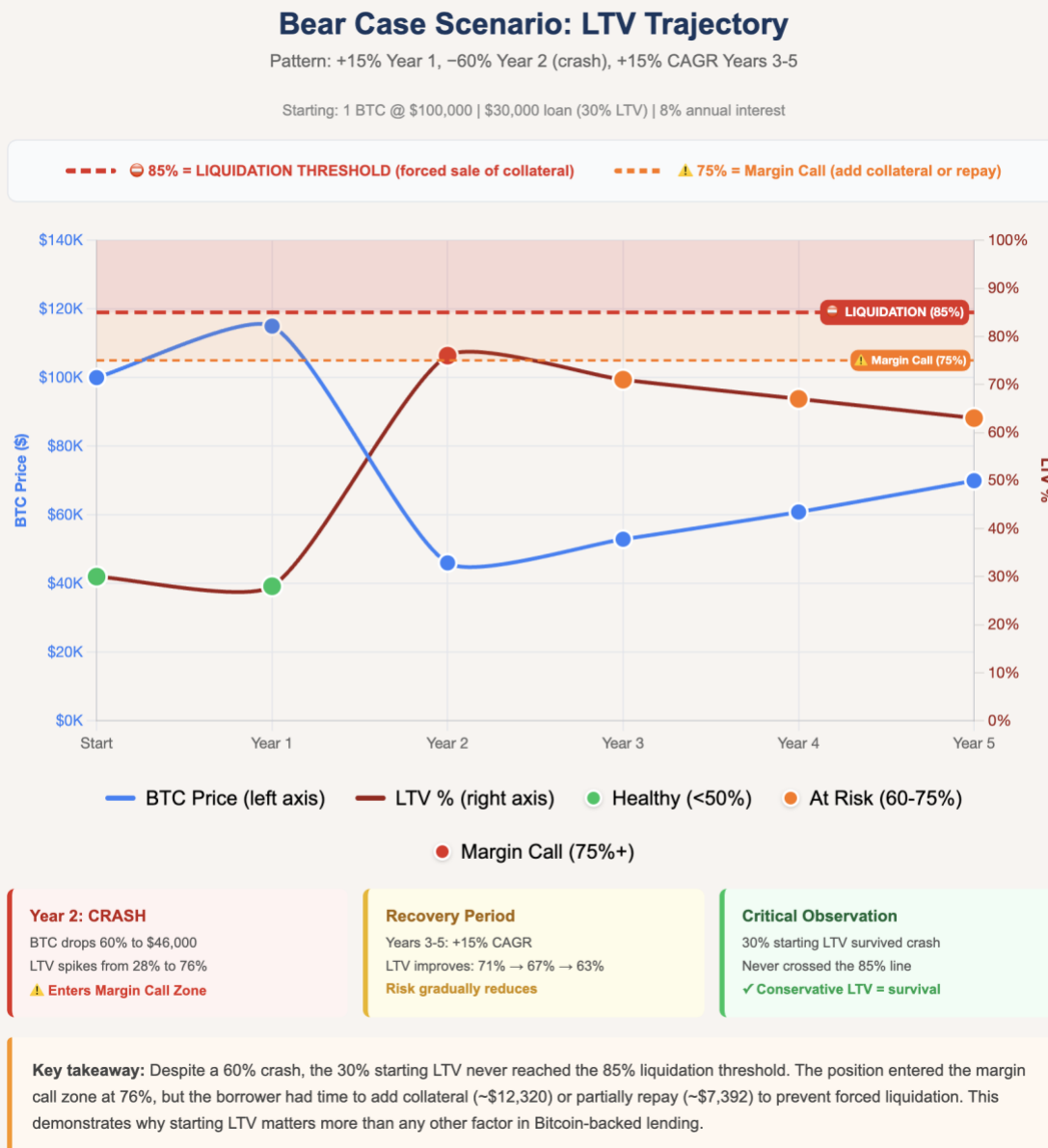
Table 3: Shows the progress of the loan per year, with the impact on the LTV and associated health, based on the collateral value and loan balance.

At the moment of crash (end of year 2), the borrower enters the margin call zone. To return to a healthy 60% LTV, the borrower would need to either:

- **Add collateral:** \$12,320 worth of BTC (approximately 0.27 BTC at crash prices)
- **Partially repay:** \$7,392 to reduce the loan balance

Critically, the borrower is not forced to realize the loss in year 5. If Bitcoin has recovered but not sufficiently to make repayment attractive, the loan can be refinanced or rolled over. At year 5, with BTC at \$69,960 and loan balance at \$44,079, the LTV is 63% as showed in Figure 1, within acceptable range for refinancing. The borrower can extend the loan term, waiting for further appreciation before repaying. This optionality is a key advantage: time is on the borrower's side, provided liquidation is avoided.

Figure 1: Bear case scenario: LTV trajectory. This figure shows a bear case scenario where the blue line shows BTC price evolution (left axis). Red line shows LTV percentage (right axis). Dashed lines indicate danger threshold: crossing 75% triggers margin-call requirements; crossing 85% triggers forced liquidation.



This analysis illustrates why LTV management is the central discipline of Bitcoin-backed lending. Liquidation is a lose-lose outcome: the borrower loses their Bitcoin at the worst possible moment (market bottom), and the lender is forced to sell into a declining market, potentially at a loss. The entire ecosystem suffers when forced selling accelerates price declines. The goal is never to reach liquidation. Conservative starting LTV (30%) provides the buffer. Active monitoring provides the warning. Capital reserves or the ability to partially repay provides the solution.

3. Potential risks of Bitcoin-backed loans

Historical lessons: leverage destroys wealth

Before examining Bitcoin-specific risks, it is essential to recognize that forced liquidation through excessive leverage is a universal pattern across all asset classes and all periods of financial history. This is not a cryptocurrency phenomenon, it is a fundamental truth about how leverage interacts with market stress.

Year	Event	Leverage Pattern	Outcome
1637	Tulip Mania ¹⁰	Futures contracts on bulbs, 10-20x leverage	95% price collapse, mass bankruptcy
1720	South Sea Bubble ¹¹	Stock purchased on margin	90% decline, investors ruined
1929	Wall Street Crash ¹²	90% margin lending commonplace	Market lost 89% over 3 years
1987	Black Monday ¹³	Portfolio insurance leverage	22% single-day drop
2008	Subprime Crisis ¹⁴	100%+ LTV mortgages	Millions of homes foreclosed
2022	Crypto Winter	80-90% LTV + rehypothecation	Celsius, FTX, 3AC, Genesis collapse

Table 4: Historical liquidation events across different asset classes.

Forced liquidation remains the greatest risk in any crisis situation, regardless of the collateral type. Whether the underlying asset is tulips, real estate, stocks, or Bitcoin, excessive leverage combined with forced selling at market bottoms destroys wealth. This is the central lesson of financial history — and the central lesson of this paper.

The evolution of Bitcoin-backed lending (2014-2025)

The Bitcoin lending market has undergone a dramatic transformation over the past decade. Understanding this evolution is critical because it explains both how the 2022 crisis occurred and why the current market operates on fundamentally different principles.

Period	Phase	What Happened	Lesson Learned
2014-2016	Pioneers	Nebeus, SALT Lending, Bitfinex margin. First simple BTC loans with basic structures.	Proof of concept successful
2017-2021	Wild Growth	BlockFi, Celsius, Nexo, Aave, Compound. 70-90% LTV. Rehypothecation. 10-20% yields.	High leverage + opacity = disaster
2022	Crash	Celsius, BlockFi, FTX, 3AC, Genesis bankrupt. Over \$15B customer assets liquidated.	The problem was never Bitcoin
2023-2024	Professionalization	LTV down to 30-50%. Proof-of-Reserves. No rehypothecation. Multisig custody.	Only conservative + transparent survives
2024-2025	Institutional	MiCAR live. SEC clarity. Strategy B-rating. JPMorgan, Goldman, Cantor enter.	Bitcoin is now institutional-grade collateral

Table 5: Shows the first years since the inception of Bitcoin-backed lending. What happened and what lessons did we learn.

The core lesson

The 2022 collapse was not a failure of Bitcoin as an asset. Bitcoin's network continued operating without interruption throughout the crisis, blocks were produced, transactions were confirmed, and the protocol functioned exactly as designed. What failed were the lending practices: excessive leverage, rehypothecation without disclosure, inadequate reserves, and platform-controlled custody that gave borrowers no protection.

The market has learned. The standards have evolved. Chapter 4 defines what prudent Bitcoin-backed lending looks like today, with supporting analysis in Appendix C.

4. The gold standard for Bitcoin-backed lending

The following standards represent lessons learned from the failures of 2022. They are not arbitrary requirements imposed by regulators, but practical safeguards that emerged from observing what went wrong. Platforms that operated with 70-90% LTV, rehypothecated customer assets, and maintained platform-only custody; these platforms failed. Platforms that maintained conservative LTV, transparent reserves, and customer key control; these platforms survived.

The gold standard is therefore not a compliance checklist but a survival framework. Lenders and borrowers should evaluate any platform against these criteria, understanding that deviation from these standards reintroduces the risks that caused \$15+ billion in customer losses in 2022.

Feature	Gold Standard	The Past	Risk Mitigation Outcome
Custody	User holds 1 key (2/3 multisig)	Platform custody only + hot wallet	BTC remains in borrower possession
LTV	30% max + real-time drift alerts	50%+ LTV, no or late alerts	Handles 65% price drop before liquidation
Transparency	24h Proof-of-Reserves	Monthly reporting (or none)	100% verifiable trust
Liquidation	2/3 multisig consensus required	Auto-platform sell	Fair and controlled process
Rehypothecation	None, or explicit consent only	Assets lent out without disclosure	No hidden counterparty risk

Table 6: The five pillars of responsible Bitcoin-backed lending. Each standard directly addresses a failure mode observed in the 2022 crisis.

Understanding the key terms

For readers less familiar with these concepts, brief explanations follow. A complete glossary is available in Appendix E.

Multisig (multi-signature) refers to a security arrangement where multiple private keys are required to authorize a Bitcoin transaction. In a 2-of-3 multisig setup, three keys exist, but only two are needed to move funds. Typically, the borrower holds one key; the lender holds one key, and a neutral third party (like a custody provider) holds the third. This means no single party can move the Bitcoin unilaterally; consensus is required.

LTV (Loan-to-Value) is the ratio of the loan amount to the collateral value. A 30% LTV means borrowing \$30,000 against \$100,000 worth of Bitcoin. Lower LTV ratios provide larger safety buffers against price declines.

Proof-of-Reserves is a cryptographic method allowing anyone to verify that a platform holds the assets it claims to hold. Using Bitcoin's transparent blockchain, auditors (or users themselves) can confirm that customer funds exist and have not been secretly lent out or moved.

Rehypothecation occurs when a lender takes collateral deposited by borrowers and uses it for their own purposes; such as lending it to third parties to earn additional yield. This creates hidden counterparty risk because the collateral may not be available when the borrower needs it returned.

LTV risk spectrum

The relationship between starting LTV and liquidation buffer is mathematical. The table below shows how much price decline each starting LTV can withstand before reaching the liquidation threshold, assuming an 85% liquidation point. For complete calculations and stress-test scenarios, see Appendix C.

LTV Zone	Range	Classification	Required Action
Gold Standard	0-30%	Optimal	Maximum safety buffer, withstands 65% price drop
Conservative	30-50%	Acceptable	Comfortable buffer, but monitor
Moderate	50-60%	Healthy	Active monitoring required, have capital ready
Elevated	60-75%	At Risk	Prepare capital for margin call immediately
Critical	75-85%	Margin Call	Immediate action required: add collateral or repay
Liquidation	>85%	Liquidation	Forced sale of collateral to protect lender

Table 7: An assumption of different ranges of LTV zones in Bitcoin-backed lending to show that each classification requires an increasing level of monitoring to address the risks of margin-call of liquidation.

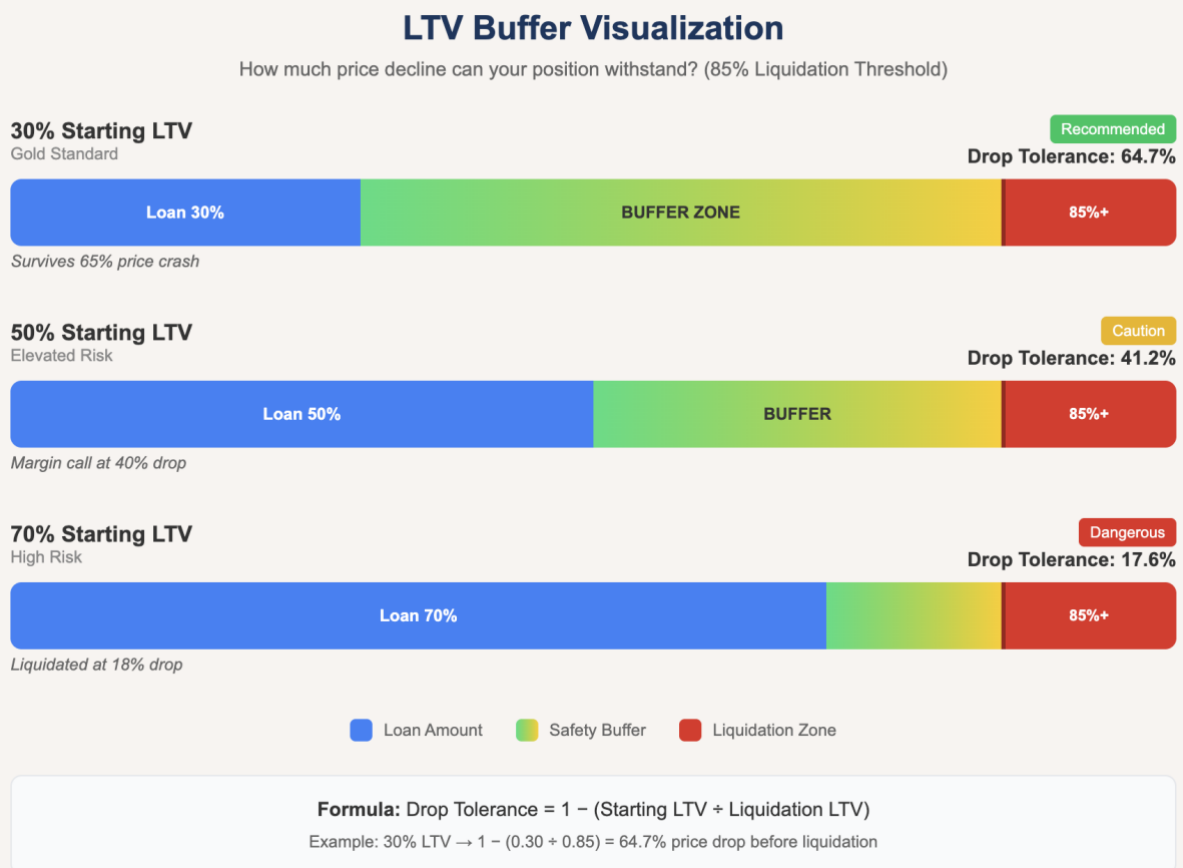
The mathematics of safety

The drop tolerance formula calculates how much the collateral can decline in value before reaching the liquidation threshold:

$$\text{Drop Tolerance} = 1 - (\text{Starting LTV} \div \text{Liquidation LTV})$$

For a 30% starting LTV with an 85% liquidation threshold: $1 - (0.30 \div 0.85) = 64.7\%$. For a visual explanation, see Figure 2 below.

Figure 2: LTV buffer visualization showing the relationship between starting LTV and Liquidation safety margin. Drop tolerance shows how much the price can drop until the liquidation zone is triggered.



A 30% starting LTV can withstand a 65% Bitcoin price decline before liquidation. This buffer covers all but the most extreme historical drawdowns, and even those took months to unfold, providing time to act at the margin call stage. See Appendix C for historical drawdown analysis.

5. Unique properties and considerations of bitcoin as collateral

Bitcoin possesses characteristics that make it fundamentally different from traditional collateral types like real estate, stocks, or bonds. For investors and lenders accustomed to conventional assets, understanding these differences is essential. This chapter explains Bitcoin's unique properties through the lens of institutional risk management, providing the context needed to evaluate it as collateral.

Understanding bitcoin: A brief foundation

Before examining Bitcoin's properties as collateral, readers unfamiliar with the technology may benefit from a brief explanation. Bitcoin is a digital asset that exists on a decentralized computer network. Unlike traditional currencies issued by central banks, Bitcoin has no central authority. Instead, its rules are enforced by software running on thousands of computers worldwide, and transactions are recorded on a public ledger called the blockchain that anyone can verify.

The key innovation is that Bitcoin solved the problem of digital scarcity. Before Bitcoin, digital files could be copied infinitely at no cost. Bitcoin's protocol ensures that each bitcoin can only exist once and can only be spent once; creating genuine digital scarcity for the first time. This is enforced by mathematics and cryptography, not by trust in any institution.

Properties by risk category

Institutional investors evaluate collateral through specific risk categories. The table below maps Bitcoin's properties to these familiar categories, followed by detailed explanations.

Risk Category	Bitcoin Properties	Explanation
Credit Risk	No issuer, no counterparty, no default possibility	Value determined purely by supply and demand without dependence on any entity's health or solvency.
Liquidity Risk	24/7 trading, ~80B daily volume, instant settlement	Trades around the clock globally. Large transactions execute without significant price impact.
Operational Risk	Self-custody possible, multisig security, perfect divisibility	Low one-time storage costs, no ongoing maintenance. Divisible to 8 decimal places.
Inflation Risk	21M cap, predictable halving, transparent monetary policy	Programmed absolute scarcity. New issuance halves every ~4 years until supply reaches maximum.

Table 8: Shows how Bitcoin scores in specific risk categories.

Credit risk: no issuer, no default

Traditional collateral assets carry credit risk; the risk that an issuer or counterparty fails. Corporate bonds can default if the company goes bankrupt. Stocks become worthless if the company fails. Even real estate values depend partly on the solvency of tenants, developers, or government entities.

Bitcoin has no issuer. There is no company behind it that can go bankrupt, no government that can devalue it through policy decisions, and no counterparty whose failure could affect its existence. The Bitcoin network is maintained by thousands of independent computers worldwide, and the asset's value is determined purely by supply and demand in global markets.

Consider the contrast: In September 2008, Lehman Brothers collapsed. Investors holding Lehman bonds, previously rated investment-grade, saw their collateral become worthless overnight. The issuer's bankruptcy meant the asset's value depended entirely on recovery proceedings that took years to resolve. In 2022, Celsius and BlockFi collapsed. Customers who had deposited Bitcoin lost access to their assets; not because Bitcoin failed, but because the platforms had secretly rehypothecated customer deposits. The Bitcoin itself continued functioning perfectly; the counterparty risk was in the custodian, not the collateral.

Bitcoin held in self-custody or proper multisig arrangements eliminates this risk entirely. There is no issuer to go bankrupt, no custodian who can misappropriate funds, no counterparty whose failure affects the asset's existence.

Liquidity risk: always open, always trading

Traditional collateral faces liquidity constraints. Real estate transactions take weeks or months to complete and involve lawyers, inspections, and title transfers. Stock markets close on weekends and holidays. Bond markets can become illiquid during crises precisely when liquidity is most needed.

Bitcoin trades 24 hours a day, 7 days a week, 365 days a year, across dozens of exchanges worldwide. Daily trading volume typically ranges between \$20 billion and \$80 billion. Consider a practical scenario: On Saturday evening at 11 PM, Bitcoin drops 15% within hours due to unexpected news. A lender holding Bitcoin-collateralized loans needs to act. With real estate collateral, nothing can be done until Monday morning when lawyers, appraisers, and courts are available. With stock collateral, markets are closed until Monday. With Bitcoin, the lender can immediately assess all positions, issue margin calls, and if necessary, execute liquidations; all within minutes, at any hour, on any day.

For institutional lenders, this constant liquidity means collateral can be monitored and managed in real-time. Price alerts can trigger margin calls within seconds of a threshold breach, and liquidation can occur before losses compound.

Operational risk: self-custody and divisibility

Physical collateral requires physical security. Gold must be stored in vaults with guards and insurance. Real estate requires title insurance, property management, and legal documentation. These create ongoing costs and operational complexity.

Bitcoin can be stored on a hardware wallet, a device roughly the size of a USB drive that costs under \$100. With proper security practices, including multisig arrangements (explained in Chapter 4), billions of dollars in Bitcoin can be secured without ongoing storage costs, insurance premiums, or physical security personnel.

Bitcoin is also perfectly divisible to eight decimal places. The smallest unit, called a satoshi, equals 0.00000001 BTC. At current prices, this means transactions can be denominated in fractions of a cent. This divisibility enables precise loan amounts, partial liquidations, and flexible collateral management that physical assets cannot match.

Inflation risk: programmed scarcity

Fiat currencies lose purchasing power over time as central banks expand the money supply. The US Dollar's M2 money supply has grown by approximately 6-7% annually in recent years. Over decades, this compounding inflation significantly erodes the real value of cash-denominated assets.

Bitcoin has a fixed maximum supply of 21 million coins, enforced by the network's code. Approximately 19.8 million have already been created. New bitcoin enters circulation through "mining" at a rate that halves approximately every four years, an event called the "halving." The most recent halving occurred in April 2024, reducing the annual inflation rate to approximately 0.8%. After the 2028 halving, it will drop to approximately 0.4%.

For detailed monetary data including halving schedules and comparison to fiat currency expansion, see Appendix D.

The scarcity advantage

Bitcoin's monetary policy deserves special attention because it represents a fundamental departure from all other assets:

- Bitcoin (2024): ~0.8% annual inflation, decreasing to ~0.4% after 2028 halving
- Gold: ~1.5-2% annual supply increase through mining (relatively stable)
- US Dollar (M2): ~6-7% annual expansion (policy dependent, can accelerate)
- Euro (M3): ~4-5% annual expansion (ECB policy dependent)

The annual expansion shown above doesn't tell the true story. Looking at annual expansion can give the impression that a year later the impact of the year before is over, but the expansion never returns, and expansion shown in a compounded view reveals its impact in the long term. For more explanation, see Figures 3 and 4 in Appendix D.

This makes Bitcoin not just an asset, but increasingly a measuring stick against which other assets can be valued. When collateral is denominated in a predictably scarce unit, both lender and borrower share a common foundation for assessing long-term value. Unlike fiat-denominated collateral, Bitcoin does not silently depreciate through monetary expansion.

Considerations and their trajectory

While Bitcoin offers unique advantages, prudent investors must acknowledge areas requiring attention. Importantly, each of these considerations is measurably improving over time.

Consideration	Current State	Mitigation	Trajectory
Volatility	35-55% annual volatility ¹⁵	Conservative LTV (30%) + 24/7 monitoring + hedging options	↓ Decreasing (was 80%+ in 2017)
Credit Rating / Basel	1,250% RWA ²	16 years network uptime, \$110B+ ETF AUM, institutional adoption	→ Under review (ETFs signal shift)
Regulation	Fragmented globally ^{16 17 18}	Jurisdictional flexibility, collateral transferable in seconds	↑ Improving (MiCAR, CFTC, JPM)

Table 9: Key considerations with mitigations and directional trajectory. Arrows indicate improving (↑), stable (→), or declining (↓) conditions.

Volatility: real but declining

Bitcoin's price volatility is its most frequently cited risk. Annual volatility currently ranges between 35% and 55%¹⁵, meaning a \$100,000 Bitcoin position could reasonably fluctuate between approximately \$50,000 and \$150,000 within a year. This is significantly higher than traditional assets like real estate (typically 5-15% annual volatility) or blue-chip stocks (15-25%).

However, volatility has declined substantially as the market has matured. In 2017, annual volatility exceeded 80%. The trend is clearly downward as market capitalization grows, institutional participation increases, and derivatives markets provide hedging tools. The critical mitigation is conservative LTV ratios: at 30% LTV, a position can withstand a 65% decline before liquidation, covering even severe corrections.

Credit rating and basel requirements: the banking barrier

Bitcoin does not have a credit rating from agencies like S&P, Moody's, or Fitch. Under Basel III/IV regulations, banks must apply a 1,250% risk weight to Bitcoin exposures²; meaning €1 million in Bitcoin-collateralized loans requires €1 million in capital. This makes Bitcoin lending economically unviable for regulated banks. See Appendix A for detailed capital requirement calculations.

However, Bitcoin's network has operated continuously for over 16 years without a single hour of downtime. The protocol has processed trillions of dollars in transactions with no systemic failures. Bitcoin ETFs now hold over \$110 billion in assets⁹, with major institutions like BlackRock and Fidelity serving as custodians. These facts suggest the current regulatory treatment may not accurately reflect Bitcoin's operational track record.

Regulation: fragmented but clarifying

Regulatory treatment of Bitcoin varies by jurisdiction. The European Union's MiCAR framework, fully effective in 2024¹⁹, provides comprehensive rules for crypto-asset service providers. In the United States, the SEC has declined to classify Bitcoin as a security¹⁶, and the CFTC treats it as a commodity. China has banned cryptocurrency trading entirely¹⁷.

Recent developments signal accelerating institutional acceptance: CFTC recognized tokenized collateral in September 2025²⁰, and JPMorgan began accepting Bitcoin ETFs as loan collateral in June 2025⁸.

6. Bitcoin as collateral: a comparison with traditional assets

The philosophical shift

Traditional credit assessment models were designed in an era of physical assets and paper-based records. They evaluate collateral based on criteria like stable cashflows, long track records, and strong legal anchoring.

Bitcoin fits none of these categories. It generates no cashflow, has only 15 years of history, and exists outside traditional legal frameworks. Through the traditional lens, Bitcoin appears to be poor collateral. This perspective is embedded in Basel III/IV regulations², which is precisely why Bitcoin receives a 1,250% risk-weighting, the highest possible category.

But a different evaluation framework is emerging among Bitcoin-native lenders, family offices, and private debt funds. This modern lens focuses on properties that matter in a digital, global, 24/7 economy: real-time transparency, instant liquidity, programmable security, and global portability.

Those who evaluate Bitcoin only through the traditional lens will not recognize its value as collateral. The traditional framework was not designed for, and cannot properly evaluate, digitally-native, transparently-verifiable assets. This is not a flaw in Bitcoin. It is a signal that evaluation frameworks need to evolve.

Scorecard 1: traditional view (bank/regulator perspective)

The following scorecard reflects how traditional banks and regulators evaluate collateral. This perspective explains why Basel III/IV imposes the highest risk weight on Bitcoin and why regulated banks have been slow to enter this market.

Criterion	Bitcoin	Real Estate	Stocks	Gold
Liquidity & Market Access	★★★★★	★☆☆☆☆	★★★★☆	★★★★☆
Price Volatility (lower = better)	★☆☆☆☆	★★★★☆	★★★★☆	★★★★☆
Average LTV Accepted	30-40%	60-80%	50-70%	60-70%
Storage/Custody Risk	★☆☆☆☆	★★★★☆	★★★★☆	★★★★☆
Track Record Length	★☆☆☆☆	★★★★★	★★★★★	★★★★★

Regulatory Clarity	★☆☆☆☆	★★★★★	★★★★☆	★★★★★
Capital Requirements (Basel)	★☆☆☆☆	★★★★☆	★★★★☆	★★★★★

Table 10: shows how traditional banks and regulators evaluate collaterals based on different criteria. The qualification shows how an asset will be valued according to these criteria.

Why does Bitcoin score poorly? Traditional risk models penalize assets with annualized volatility above 20%, Bitcoin's 35-55% is 2-3x this threshold. Traditional frameworks assume custody through regulated depositories with established legal protections; Bitcoin's self-custody model is unfamiliar. Risk committees typically require 20+ years of data; Bitcoin's 15-year history is insufficient. Basel III/IV's 1,250% risk weight reflects this regulatory uncertainty.

Scorecard 2: Modern view (family office / debt fund perspective)

This scorecard reflects how family offices, private debt funds, and Bitcoin-native lenders evaluate collateral; entities not bound by Basel constraints who can evaluate Bitcoin on its merits.

Criterion	Bitcoin	Real Estate	Stocks	Gold
24/7 Liquidity	★★★★★	★☆☆☆☆	★★★★☆	★★★★☆
Real-time Verifiability	★★★★★	★☆☆☆☆	★★★★☆	★★★★☆
Settlement Speed	★★★★★	★☆☆☆☆	★★★★☆	★★★★☆
Storage Costs	★★★★★	★★☆☆☆	★★★★☆	★★★★☆
No Counterparty Risk	★★★★★	★★★☆☆	★★★☆☆	★★★★☆
Global Portability	★★★★★	★☆☆☆☆	★★★★☆	★★★★☆
Price Stability	★★☆☆☆	★★★★☆	★★★★☆	★★★★☆

Table 11: shows how the more Bitcoin native companies, family offices and debt funds evaluate collaterals based on different criteria. The qualification shows how an asset will be valued according to these criteria.

Why does Bitcoin excel? Bitcoin can be verified instantly via the blockchain; compared to real estate (title search), stocks (broker confirmation), or gold (physical audit). A hardware wallet costs under \$100 with no ongoing fees; compared to gold vaults (0.5-1% annually) or real estate (taxes, insurance, maintenance). With proper self-custody, Bitcoin cannot be frozen, seized, or made worthless by any third party's bankruptcy.

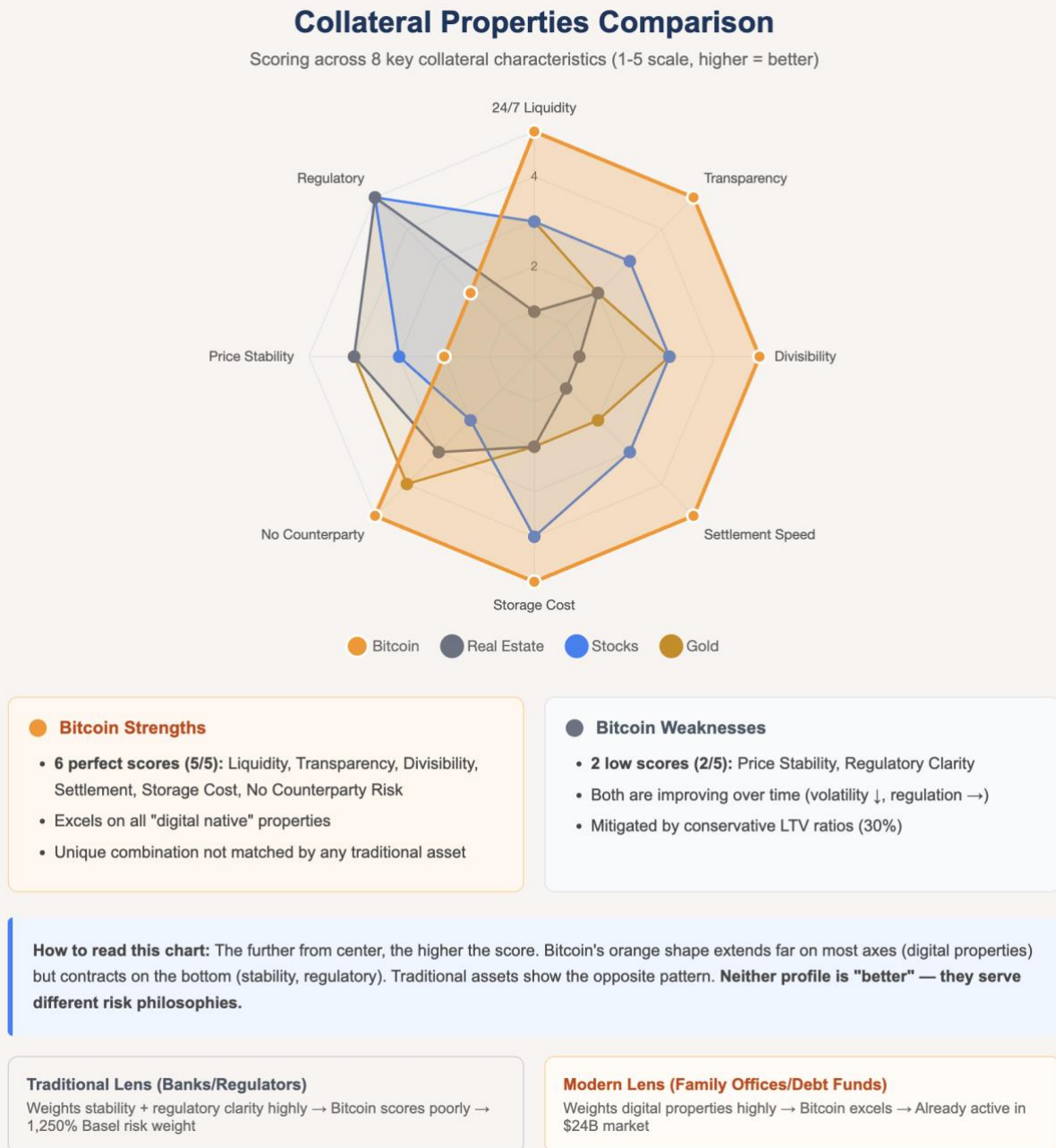
Collateral properties scoring matrix

The following matrix provides numerical scoring across eight core properties. Bitcoin excels on digital characteristics while traditional assets score higher on stability and regulatory anchoring.

Property	Bitcoin	Real Estate	Stocks	Gold
24/7 Liquidity	5	1	3	3
Transparency	5	2	3	2
Divisibility	5	1	3	3
Settlement Speed	5	1	3	2
Storage Cost	5	2	4	2
No Counterparty Risk	5	3	2	4
Price Stability	2	4	3	4
Regulatory Clarity	2	5	5	5

Table 12: Scoring matrix (1-5 scale). Bitcoin achieves perfect scores on six properties and scores low only on price stability and regulatory clarity, both improving over time. For a visual overview, see Figure 3 below.

Figure 3: Shows collateral properties Comparison, a radar chart comparing collateral properties across asset classes. Bitcoin, Real Estate, Stocks and Gold are compared based on 8 key collateral characteristics. In the overlap, we can see the comparison shows where Bitcoin dominates digital characteristics (top) while lagging on traditional stability metrics (bottom).



Key insight

Traditional frameworks and modern frameworks reach different conclusions because they weight different properties. Neither is objectively correct; they reflect different priorities and risk tolerances. Readers should determine which framework aligns with their own risk assessment philosophy.

The same asset, evaluated through two different lenses, produces opposite conclusions. Family offices and private debt funds are already bridging this gap by applying the modern lens. As Basel frameworks evolve, traditional banks will likely enter this market. Those who develop expertise in Bitcoin collateral assessment today will be positioned to serve the broader market tomorrow.

7. Conclusion

The opportunity

For family offices, private debt funds, and institutional lenders: the infrastructure is in place, the standards are proven, and the market has validated the model. A \$24 billion institutional market¹ is positioned at the doorstep of \$130 trillion in fixed income capital. Those who enter now; with discipline, conservative structures, and proper due diligence, are not taking a speculative bet. They are participating in a structural repricing of what collateral can be.

The opportunity is not without risk. Volatility is real. Regulatory frameworks are evolving. Operational requirements differ from traditional lending. But for those who apply the gold standard; 30% LTV, Proof-of-Reserves, multisig custody, no rehypothecation, 24/7 monitoring; the risk is measurable, manageable, and, for the first time in Bitcoin's history, institutionally defensible.

Practical guidance

For borrowers: Evaluate any lending platform against the gold standard criteria. Ask specifically: What is the maximum LTV? Who controls the keys? Is Proof-of-Reserves available? Is rehypothecation disclosed? Platforms that cannot answer these questions clearly should be avoided.

For lenders: The institutional opportunity is real, but due diligence is essential. Look for platforms with conservative LTV policies, institutional-grade custody partners, transparent reserve verification, and clear liquidation procedures. Evaluate which platforms come closest to the gold standard criteria established in this paper.

On framework evolution: Current regulatory treatment reflects frameworks designed before Bitcoin existed. As the asset class matures; with 16 years of network uptime, \$110+ billion in ETF assets, and growing institutional adoption, regulatory recalibration is likely. When Basel frameworks are adjusted to better reflect Bitcoin's characteristics, traditional banks will enter this market at scale. Those who develop expertise in Bitcoin collateral assessment today will be positioned to serve the broader market tomorrow.

The horizon: emerging products

The next wave of innovation I foresee is already taking shape:

- **Multi-collateral structures:** Combining Bitcoin with other assets to create diversified collateral pools, reducing single-asset volatility exposure while preserving digital collateral benefits.
- **Non-liquidation insurance:** Products that protect borrowers from forced liquidation during extreme market events, adding a safety layer that prevents loss of collateral even during temporary price breaches.
- **Income-based products:** Structures leveraging Bitcoin as collateral to generate yield or structured income streams, bridging the gap between passive holding and active income generation

These developments signal that Bitcoin-backed lending is not a static market. It is an evolving infrastructure that will continue to mature as institutional participation grows.

For over a century, the financial system has operated on trust: trust in central banks to manage money supply responsibly, trust in custodians to safeguard assets, trust in counterparties to honor commitments. Bitcoin introduces something different: verification. Not trust, but proof. Not promises, but mathematics.

As an asset with a fixed supply in a world of infinite money printing, Bitcoin is not just collateral. It is a measuring stick. A reference point. A standard against which all other assets will increasingly be measured. Its monetary policy is not decided in committee meetings or influenced by political pressure, it is enforced by code running on computers worldwide.

The question is no longer whether Bitcoin belongs in the fixed-income market.

The question is whether you will be early, or late.

Appendix A: Risk weighted assets & capital requirements

Under Basel III/IV regulations², banks must hold capital proportional to the risk-weighted value of their assets. Bitcoin's classification results in the highest possible risk weight, creating significant barriers for traditional bank participation.

Collateral (€1M)	Risk Weight	RWA Calculation	RWA	Required Capital (8%)
Physical Gold	0%	€1,000,000 × 0%	€0	€0
Residential Mortgage	28%	€1,000,000 × 28%	€280,000	€22,400
Commercial Real Estate	90%	€1,000,000 × 90%	€900,000	€72,000
Listed Equities	250%	€1,000,000 × 250%	€2,500,000	€200,000
Bitcoin (Spot)	1,250%	€1,000,000 × 1,250%	€12,500,000	€1,000,000

Table 13: shows the risk-weight per asset class. Based on the risk-weight percentage, we calculate the required Tier 1 capital a bank needs to hold on its balance sheet. $RWA = \text{Risk-Weighted Assets}$. $\text{Required Capital} = RWA \times 8\%$ minimum Tier 1 capital requirement.

Comparative analysis

For a traditional EU bank under Basel III/CRR III (2025), Bitcoin as collateral is:

- Approximately 44× more capital-intensive than a residential mortgage
- Approximately 14× more capital-intensive than commercial real estate
- Approximately 5× more capital-intensive than listed equities
- Not comparable to gold (which carries 0% risk weight)

This explains why non-bank lenders (family offices, debt funds) are leading market development, they are not subject to these capital requirements.

Appendix B: Scenario Analysis Calculations

This appendix provides the complete mathematical methodology behind the scenario analysis presented in Chapter 2. All calculations assume a 5-year holding period and compare two strategies: (1) borrowing against Bitcoin collateral, and (2) selling Bitcoin directly to obtain the same liquidity.

Base Assumptions

Parameter	Value
Starting BTC Holdings	1 BTC
Starting BTC Price	\$100,000
Loan Amount	\$30,000 (30% LTV)
Interest Rate	8% annually (compounded)
Time Horizon	5 years
Direct Sale Alternative	Sell 0.30 BTC for \$30,000, retain 0.70 BTC

Conservative Scenario (+15% CAGR)

1. BTC price in 2030

With an annual price increase of 15%:

$$\$100,000 \times (1.15)^5 \approx \$201,136$$

2. BTC required to repay the loan

After 5 years, the loan has grown to \$44,080 with 8% annual compounding interest. The amount of BTC that must be sold to repay the loan is calculated as follows:

$$\text{Total outstanding loan} \div \text{Bitcoin value 2030}$$

$$\$44,080 \div \$201,136 \approx 0.219 \text{ BTC}$$

3. BTC holdings after repayment in 2030

$$1 \text{ BTC} - 0.219 \text{ BTC} \approx \mathbf{0.781 \text{ BTC}}$$

Because the Bitcoin price grew faster than the interest on the loan, there is more Bitcoin remaining after 5 years than a direct sale in 2025 would have provided. A direct sale would have resulted in 0.70 BTC (after selling 0.30 BTC immediately). The loan results in a position difference of:

$$0.781 - 0.70 \approx \mathbf{+0.081 \text{ BTC}}$$

4. Annualized outperformance

The annualized outperformance of the loan strategy versus direct sale:

$$(0.781 \div 0.70)^{1/5} - 1 \approx \mathbf{+2.2\% \text{ p.a.}}$$

Bear Case (+15% Y1, -60% Y2, +15% CAGR Y3-5)

1. BTC price trajectory

Year	Calculation	BTC Price
Start	—	\$100,000
Year 1	$\$100,000 \times 1.15$	\$115,000
Year 2 (crash)	$\$115,000 \times 0.40$	\$46,000
Year 3	$\$46,000 \times 1.15$	\$52,900
Year 4	$\$52,900 \times 1.15$	\$60,835
Year 5	$\$60,835 \times 1.15$	\$69,960

2. BTC required to repay the loan

$$\$44,080 \div \$69,960 \approx \mathbf{0.630 \text{ BTC}}$$

3. BTC holdings after repayment

$$1 \text{ BTC} - 0.630 \text{ BTC} \approx \mathbf{0.370 \text{ BTC}}$$

4. Versus direct sale

$$0.370 - 0.70 \approx \mathbf{-0.330 \text{ BTC}}$$

The borrower ends up with 0.330 BTC less than if they had simply sold 0.30 BTC at the start.

5. Annualized underperformance

$$(0.370 \div 0.70)^{1/5} - 1 \approx \mathbf{-12.0\% \text{ p.a.}}$$

Summary Comparison

Scenario	BTC Price 2030	BTC to Repay	BTC Remaining	vs Sale	Annualized
Bear Case	\$69,960	0.630	0.370	-0.330	-12.0% p.a.
Conservative	\$201,136	0.219	0.781	+0.081	+2.2% p.a.
Realistic	\$371,293	0.119	0.881	+0.181	+4.7% p.a.
Historical	\$1,048,576	0.042	0.958	+0.258	+6.5% p.a.

This analysis assumes the borrower holds through all scenarios without additional margin calls or collateral additions. In practice, active LTV management during the Bear Case would require either adding collateral or partially repaying the loan during the year 2 crash to avoid approaching liquidation thresholds. See Appendix C for detailed LTV management calculations.

Appendix C: LTV & liquidation threshold analysis

Drop tolerance formula

$$\text{Drop Tolerance} = 1 - (\text{Starting LTV} \div \text{Liquidation LTV})$$

Drop tolerance by starting LTV

Starting LTV	Liquidation LTV	Calculation	Drop Tolerance
20%	85%	$1 - (0.20 \div 0.85)$	76.5%
25%	85%	$1 - (0.25 \div 0.85)$	70.6%
30%	85%	$1 - (0.30 \div 0.85)$	64.7%
40%	85%	$1 - (0.40 \div 0.85)$	52.9%
50%	85%	$1 - (0.50 \div 0.85)$	41.2%

Table 14: Shows the increasing drop tolerance based on the starting LTV and measured on a liquidation trigger after 85% price drop. The more conservative the starting LTV is, the bigger drop tolerance before liquidation.

Stress Test: 60% Crash

Metric	30% Starting LTV	50% Starting LTV
Starting BTC Value	\$100,000	\$100,000
Loan Amount	\$30,000	\$50,000
BTC Value After 60% Drop	\$40,000	\$40,000
New LTV	75%	125%
Status	Margin Call - Time to Act	LIQUIDATED

Table 15: shows the difference between a 30% LTV loan and a 50% LTV loan in a situation where the price drops 60%. The 30% LTV position survives with time to act; the 50% LTV position is liquidated with total loss of collateral.

Appendix D: Bitcoin monetary properties

Bitcoin inflation schedule

Halving	Year	Block Reward	Annual Issuance	Inflation Rate
1st	2012	25 BTC	~1,312,500 BTC	~12%
2nd	2016	12.5 BTC	~656,250 BTC	~4%
3rd	2020	6.25 BTC	~328,125 BTC	~1.8%
4th	2024	3.125 BTC	~164,063 BTC	~0.8%
5th	2028	1.5625 BTC	~82,031 BTC	~0.4%

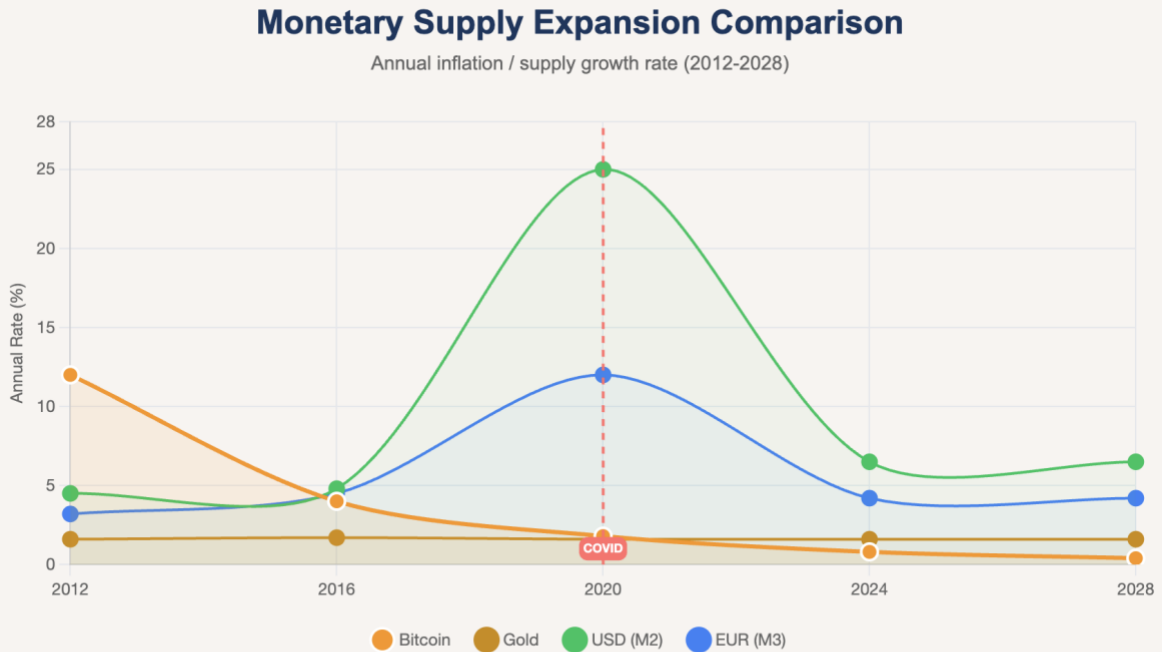
Table 16: shows the backed in inflation emission in the bitcoin protocol. It halves every four year, with the next halving in 2028 where the inflation rate halves from ~0.8% to ~0.4%

Monetary expansion comparison

Year	Bitcoin	Gold	USD (M2)	EUR (M3)
2012	~12%	~1.6%	~4.5%	~3.2%
2016	~4%	~1.7%	~4.8%	~4.5%
2020	~1.8%	~1.6%	~25%*	~12%*
2024	~0.8%	~1.6%	~6.5%	~4.2%
2028 (proj)	~0.4%	~1.6%	~6.5%**	~4.2%**

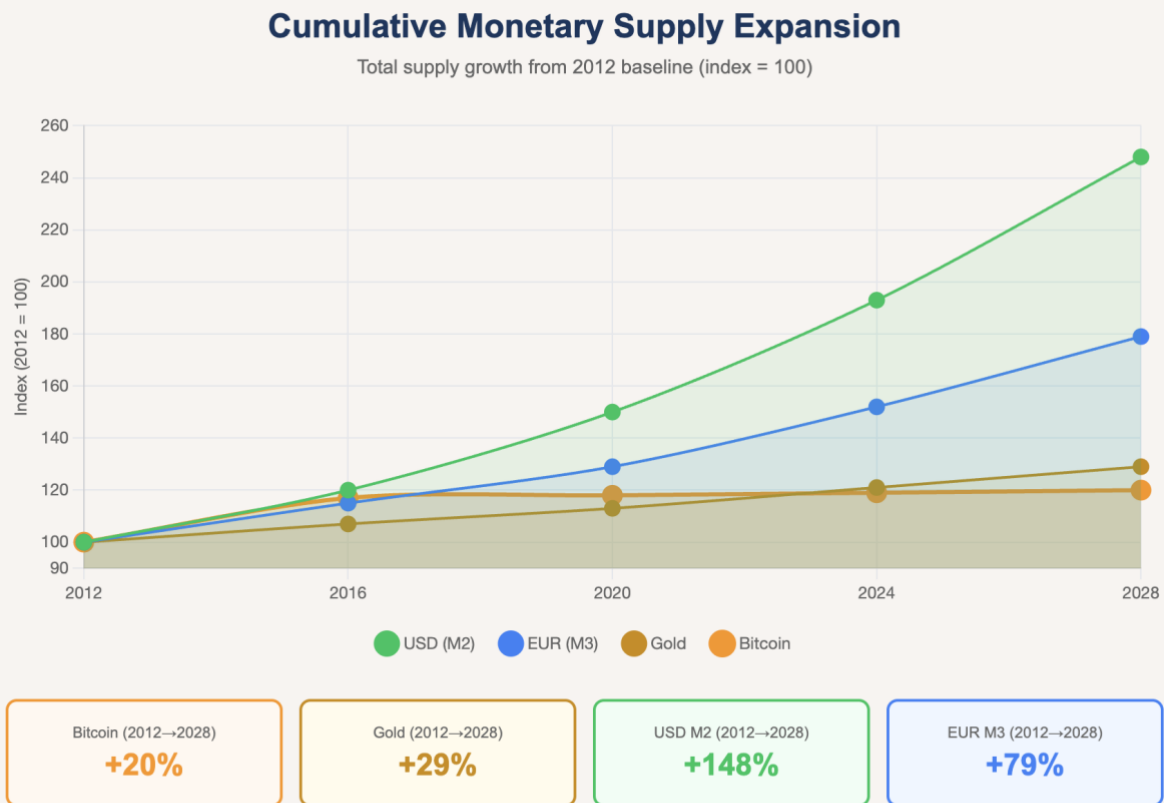
Table 17: shows the comparison of the monetary expansion, as in a % new issued units. *COVID stimulus response. **Assumption: monetary policy remains at current levels.

Figure 3: Shows Annual monetary supply growth rates (2012-2028). The 2020 spike reflects COVID stimulus. 2028 fiat projections assume current monetary policy continues. This illustrates that in situations of stress fiat currency's monetary supply are expanded to stimulate, or cover costs, while Bitcoin and Gold remain stable and preserve buying power.



Key insight: Bitcoin's inflation rate decreases predictably through programmed halvings, while fiat currencies expand unpredictably — particularly during economic stress (2020 COVID response at 25% for USD). By 2028, Bitcoin's ~0.4% inflation will be 4× lower than gold and 16× lower than USD.

Figure 4: Shows the compounded monetary supply expansion from 2012 to 2028. Bitcoin's 2028 inflation rate is mathematically certain; the halving is programmed into the protocol. Fiat currency projections assume current monetary policy continues, though historical patterns suggest expansion accelerates during economic stress. Expansion is final and cannot be reversed; that is why you see the impact better in a compounded chart.



Key insight: Over 16 years (2012-2028), Bitcoin's total supply grows only 20%, while USD supply grows 148% — a 7× difference. Most of Bitcoin's expansion happened early (2012-2016). From 2024 onwards, Bitcoin adds less than 1% annually while fiat continues expanding 5-7% per year. The divergence accelerates over time.

Appendix E: Glossary of terms

Term	Definition
BBL	Bitcoin-Backed Lending. Loans collateralized by Bitcoin holdings.
LTV	Loan-to-Value ratio. Loan amount divided by collateral value. 30% LTV = \$30,000 loan against \$100,000 collateral.
CAGR	Compound Annual Growth Rate. Mean annual growth rate over a period, accounting for compounding.
Multisig	Multi-signature. Security requiring multiple keys to authorize transactions. 2-of-3 = any two of three keyholders.
Hardware Wallet	Physical device storing Bitcoin private keys offline. Examples: Ledger, Trezor.
Private Key	Cryptographic code proving Bitcoin ownership. Cannot be changed or recovered if lost.
Proof-of-Reserves	Cryptographic verification that a custodian holds claimed assets, verifiable on blockchain.
Rehypothecation	When a lender uses deposited collateral for own purposes. Creates hidden counterparty risk.
Margin Call	Demand for additional collateral or partial repayment when LTV exceeds threshold.
Liquidation	Forced sale of collateral when LTV exceeds maximum threshold.
RWA	Risk-Weighted Assets. Assets adjusted by risk factors for capital calculations.
Basel III/IV	International regulatory frameworks for bank capital requirements.
CeFi	Centralized Finance. Crypto services provided by centralized institutions.
DeFi	Decentralized Finance. Services via smart contracts without central intermediaries.
MiCAR	Markets in Crypto-Assets Regulation. EU regulatory framework, effective 2024.
Halving	Bitcoin's 50% reduction in block rewards every 4 years
Satoshi	Smallest Bitcoin unit. 0.00000001 BTC (one hundred millionth).

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