

RESEARCH ARTICLE

The Satoshi Overhang: Why the Bear Case is Bounded

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Abstract. Renewed attention to the identity of Bitcoin’s pseudonymous creator has revived an old worry: that the roughly 1.148 million BTC mined by Satoshi and never moved represent a major tail risk for Bitcoin. This paper argues that the worry is overstated. The mechanical downside of selling the position is bounded well below the feared collapse, and the outcomes most consistent with sixteen years of observed behavior are not bearish for Bitcoin’s effective supply. We analyze the position in two ways. First, we model the case of a purely financial holder. Multiple sale scenarios, checked against both a square-root-law estimate and the historical record of large sales, suggest that Bitcoin’s current market liquidity could absorb a patient multi-year sale with a cumulative price impact centered around 10 to 13 percent relative to a no-sale case. The same arithmetic also links the downside from a surprise sale to the upside from a confirmed burn: both are bounded by the same effective-supply adjustment, so the doom case and the burn-rally case cannot both be large. Second, we consider the preferences implied by the sixteen-year record. Ideological restraint, privacy, already having enough, and preserving the myth all point toward further dormancy, permanent loss of access, or a deliberate burn. A sale or an act of sabotage remains possible, but the record supports it less strongly. Under both approaches, the mechanical bear case is bounded, and the likeliest outcomes are neutral to mildly positive for Bitcoin’s effective supply. The argument does not rule out transient overshoot or leverage-driven amplification; it bounds the durable repricing the coins themselves can cause.

1. Introduction

Satoshi Nakamoto mined the first large share of Bitcoin’s money supply during 2009 and the first half of 2010, stopped posting publicly in December 2010, and last communicated privately in April 2011.^{1–3} The coins from that early mining, about 1.148 million BTC, have never moved. Sergio Demian Lerner identified them from the Satoshi (a blend of “pattern” and “Satoshi”) pattern in the coinbase transactions of the first roughly 36,000 blocks.^{4,5} Bitcoin’s total mined supply is now about 20.01 million BTC.⁶ Estimates of permanently lost coins range from 2.78 to 3.79 million BTC in the most-cited segmentation study (Chainalysis, reported in Roberts and Rapp)⁷ up to substantially higher dormancy-based figures used in on-chain research.⁸ Satoshi’s coins are therefore about 5.7 percent of mined supply and roughly 7.6 percent of freely circulating supply, defined as mined supply minus lost coins minus the position itself (Appendix A.1).

The market has long treated this concentration as a tail risk, and the reasoning is intuitive: a

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sale could overwhelm normal liquidity, and the seller's identity could itself cause panic. The usual conclusion is that Satoshi's coins impose a standing discount on Bitcoin's value, one that should lift only if the coins are confirmed gone for good and worsen on any sign that they are moving. We treat this as the view to be tested, not as a premise. Whether large holdings create lasting discounts is still debated even for public stocks. Markets apply no agreed discount to founder stakes of similar relative size; Tesla under Elon Musk is the clearest current example. Large, disclosed founder sales can cause real drawdowns, but those are usually bounded and at least partly temporary, not catastrophic. The Satoshi position differs from a corporate blockholding in ways that cut both ways. There is no disclosure regime, no Rule 10b5-1 machinery, and no cash-flow floor under the price, all of which strengthen the information channel. But there is also no company whose control or strategy a sale would change, and sixteen years of verifiable dormancy is a behavioral record no corporate blockholder offers. Section 3.4 makes the word "discount" precise: it is the market's residual probability of an eventual sale, multiplied by a total spread that the absorption arithmetic fixes, and the paper's claims are written to hold for every value of that probability.

The immediate occasion of this paper is a wave of investigative journalism, most prominently Carreyrou,⁹ naming Adam Back as the leading candidate for Satoshi. The market's reflex is to read a more concrete, nameable holder as more tail risk: if you can name the holder, you can reach, coerce, tax, or persuade the holder to sell. We argue this reflex overweighs the downside, and the market's own response to the reporting, essentially nothing on the day of publication (Section 3.2), is early evidence for that. Two fears drive the tail-risk view, and neither holds up. The first is mechanical: that 1.148 million BTC is simply too much for the market to absorb. Bitcoin's current liquidity and execution capacity say otherwise; a patient multi-year sale would cause a bounded mechanical price impact far below the collapse the tail-risk view implies (Appendix A). The second is behavioral: that the holder will actually run such a sale. That is hard to square with sixteen years of revealed preference. On both counts, the plausible outcomes for the position are neutral to mildly positive for Bitcoin. The mechanical bear case is bounded, and the likeliest outcomes are not bearish.

This is a conceptual paper, not an empirical study. It combines stylized market-microstructure reasoning, a scenario-based bound on mechanical impact (cross-checked against the empirical square-root law of price impact), event-based anchors from past large Bitcoin sales, revealed-preference inference from sixteen years of holder behavior, and a comparative look at the cryptographic and legal tools available for inheritance and destruction. It does not try to identify Satoshi, to measure the market's implied probabilities, or to recommend trades. The paper focuses on the structure of the disposition problem and the ordering of likely outcomes.

A paper that mixes arithmetic, empirical inference, and reasoned judgment risks letting formal language pass judgment off as fact. To prevent that, we label the standing of each kind of claim and use the labels consistently. *Derived* claims follow logically or arithmetically from stated assumptions; they are certain given those assumptions and worth no more than the assumptions are. The Track 1 absorption bound (Appendix A) and the consistency-ledger identity (Section 3.4) are derived, but they differ in an important way: the ledger identity holds exactly, while the bound's inputs (demand elasticity, the lost-coins adjustment, and execution friction) are illustrative and deliberately uncalibrated, so the bound is a structured upper bound under stated inputs, not a measurement. *Inferred* claims are read from evidence and stated with their

uncertainty; the main one here is negative, drawn from the sixteen-year record: pure wealth-maximization is a weak prior for this holder. *Judgment* claims are the author's assessments where the evidence runs out; the ordering of outcomes in Section 4 and their relative weight are judgment, offered as a reasoned ranking and labeled as such, not as a measurement or a probability. Where we call something derived, the reader can check the derivation; where inferred, weigh the evidence; where judgment, disagree without contradicting any finding.

The paper proceeds as follows. Section 2 explains why people came to fear that a Satoshi sale could crash the price, and why that fear, drawn by analogy from controlling-shareholder and artist-estate cases, is weaker for Bitcoin than it first appears. Section 3 takes the holder who cares only about money, derives an upper bound on the mechanical bear case, and closes with a ledger that keeps the paper's later claims about what the market already prices mutually consistent. Section 4 takes a holder whose profile matches the sixteen-year record and maps the range of outcomes instead of picking one. Section 5 turns to estate planning and argues that cryptographic inheritance tools may beat conventional trusts on the costs this holder seems to care about. Section 6 draws out the market implications. Section 7 places the problem in the wider class of sales whose value depends on the act of selling. Appendix A gives the scenarios behind Track 1; Appendix B gives the mechanics of a provable burn.

The closest prior observation we know of is a practitioner one: Danny Bradbury's 2014 *CoinDesk* piece, "How Dangerous is Satoshi Nakamoto?", in which Gavin Andresen and Sergio Lerner discussed the possibility that Satoshi might burn the coins, with Lerner noting that "if he did burn them, the market reaction would be terribly bullish".² That remark was casual. It did not model the holder's decision, bound the mechanical bear case, address estate planning, or use the revealed-preference evidence. This paper takes up those tasks.

1.1. Related Literature—Three strands of academic work bear on the question, though none addresses it as posed here. On Track 1's mechanical channel, the closest empirical neighbor is Ante and Fiedler,¹⁰ whose event study of 2,132 transfers of at least 500 BTC over 2018 to 2019 finds that the short-run price reaction to large on-chain moves depends on transfer size and on the market's read of motive, not on size alone. That fits the temporary-versus-permanent split used here, but it measures reactions over hours and days to ordinary large transfers, not the multi-year sale of a founder-scale position, and it gives no cumulative bound. On concentration, Makarov and Schoar use blockchain data to show that Bitcoin holdings are highly concentrated among a few large holders and intermediaries;¹¹ their subject is the active market, and they do not address what becomes of the earliest dormant coins, so the founder-overhang question remains open in their account. On effective supply, Ambrosia, Dorrell and Stockwell give peer-reviewed estimates of active versus lost bitcoins that support, rather than compete with, the lost-coins adjustment of Appendix A.1.⁸ Alongside these sit the microstructure foundations the paper uses directly,^{12–14} the blockholder and artist-estate work behind its analogies,^{15–17} and the event-study methods cited in Section 3.2.^{18–20} What none of this work does, and what this paper attempts, is to put a mechanical absorption bound, a revealed-preference reading of sixteen years of dormancy, and a comparative look at inheritance and destruction together into one assessment of how the Satoshi position is likely to resolve. Section 6.1 says which parts of that assessment are new and which are synthesized.

2. The Reflexive-Liquidation Frame

Standard microstructure models split the cost of selling a large position into two parts: a temporary impact, the price concession needed to find buyers now, and a permanent impact, the information the market reads from the order flow.^{12, 13, 21} A patient seller can shrink the temporary part by spreading trades over time and soften the permanent part by trading when information asymmetry is low. Almgren and Chriss give a closed-form trade-off between volatility risk and execution cost. In these models the sale value of a large block is below its mark-to-market value, but the shortfall is bounded and grows smoothly with size.

Two caveats. First, Almgren and Chriss is a stylized planning model: it treats impact as fixed, parametric, and stable, whereas Bitcoin's actual impact follows the square-root law documented by Donier and Bonart and depends on the order book and on what the market infers about the seller's identity and intent,¹⁴ which is exactly the channel at issue here. We therefore use the model only for its split of temporary and permanent impact and its volatility-cost trade-off; none of the numbers in Section 3 or Appendix A rely on its functional forms.

The Satoshi problem has usually been seen as going beyond this standard picture. The extra ingredient, in the usual reading, is the collapse that follows once the seller's identity is known. Bitcoin has no cash flows and no intrinsic floor; its price rests on beliefs about future scarcity, future adoption, and the intentions of its largest holder. Any move from a known Satoshi address would be spotted within minutes and be global news within hours, and, in the usual reading, would wipe out whatever part of the price assumes Satoshi's coins stay dormant forever.

This is "reflexive" in George Soros's sense: a two-way loop in which expectations and fundamentals each move the other.^{22, 23} Prices are not passive readings of independent fundamentals; they help shape the fundamentals they are supposed to measure.

Two analogies from traditional finance carry the idea to the Satoshi case. The first is the controlling founder whose stake exceeds the public float. The blockholder literature finds that in such cases the information in a founder's trading, a signaling problem in the sense of Spence, often matters more than its mechanical supply effect: the price reaction is not just proportional to the float sold, it reflects what the market infers about the founder's changed view of the firm.^{15, 16, 24} The usual fixes, charitable transfers combined with 10b5-1 structured secondary offerings,²⁵ work by separating the mechanical part of a sale from its informational part, keeping the first while defusing the second. The Satoshi position has the same shape: mechanical absorption is manageable under any plausible depth assumption, so the weight of the problem falls on the information channel.

The second analogy is the estate of a dead artist holding a large inventory whose forced, simultaneous sale would depress prices per work. U.S. tax law recognizes this as the "blockage discount," sustained at 37 percent in *Estate of David Smith v. Commissioner*,²⁶ and at an effective 37 percent in *Estate of O'Keeffe v. Commissioner*, T.C. Memo 1992-210.¹⁷ This case fits the Satoshi case better than the founder case in one respect: the originator is no longer producing, so the market must judge scarcity without reference to ongoing output. The standard fix, staged sale through a foundation or estate over decades, is a direct analogue to Track 1's patient liquidation, and it shows the problem is tractable whenever the holder, or a successor, can spread the sale over time.

These analogies frame the concept, but they do not by themselves make the overhang a tail

risk for Bitcoin. Sections 3 and 4 show that for Bitcoin in 2026 patient execution makes the mechanical absorption of Satoshi's position a manageable constraint, and that the information channel, though it cannot be forecast in advance, is bounded in its mechanical part and has been weak in the nearest recorded events.

3. Track 1: The Wealth-Maximizer's Problem

This section studies the holder of the 1.148 million BTC Satoshi position whose only goal is personal wealth. The holder is otherwise rational, informed, and strategic, with no ideological, legacy, or privacy aims beyond what execution requires. Track 1 bounds the mechanical downside for Bitcoin if the real holder did happen to be a pure wealth-maximizer.

3.1. Market Depth and Absorption Arithmetic—Satoshi's position is about 5.7 percent of mined supply and about 7.6 percent of freely-circulating supply after the lost-coins adjustment of Appendix A.1. At a reference price of 80,000 USD per BTC (roughly the late-April 2026 level; Appendix A.1), the position is worth about 92 billion dollars. A patient holder running a decade-long OTC program would sell about 115,000 BTC per year, roughly 315 BTC per day in a market that trades around the clock. Global Bitcoin spot and derivatives volume runs in the tens of billions of dollars per day, with real (non-wash) spot volume plausibly 10 to 20 billion. A 25-million-dollar daily OTC flow is 0.1 to 0.25 percent of real daily volume, the kind of background flow a mid-sized institutional desk handles routinely; even under a steep discount to reported volumes of the kind Bitwise Asset Management documented for the SEC in 2019, the participation rate stays in the low single digits (Appendix A.1).

Against the heuristic elasticity range of Appendix A, roughly 0.3 (very inelastic) to 1.5 (closer to equities), selling the full 7.6 percent of float implies a static, partial-equilibrium cumulative price impact of about 5 to 22 percent relative to the no-sale case, depending on elasticity. Appendix A works through three scenarios, conservative, base, and aggressive, each with stated assumptions about pace, participation, elasticity, execution quality, and demand growth. The central scenario sits near 10 percent permanent impact, 12 to 13 percent once execution friction is added; the aggressive scenario reaches about 25 to 27 percent under low elasticity and uneven execution. An independent check using the empirical square-root law of price impact, which shares no parameters with the elasticity arithmetic, lands in the same range (Appendix A.8).

Empirical episodes bound the *temporary* part of impact under different execution styles, while the elasticity arithmetic addresses the *permanent* part. Between June 19 and July 12, 2024, authorities in the German state of Saxony sold 49,858 BTC seized in a criminal case, in publicly-tracked tranches over twenty-three days, and Bitcoin fell roughly 13 to 15 percent over the episode, a window that also held the announced Mt. Gox distribution of about 140,000 BTC and a forced unwind of leveraged longs.²⁷ The price began recovering within days of the final tranche and was back to its pre-episode level within weeks. A sale of about 0.3 percent of float whose price effect mostly reverses has a large temporary part and a permanent part near zero; read as permanent, it would imply a demand elasticity an order of magnitude below any proposed value, and the recovery is the evidence against that reading. By contrast, the U.S. Marshals auctions of Silk Road coins, less publicized and sold straight to institutional buyers, drew muted or even positive responses; the June 2014 auction of about 29,656 BTC, won in full

by a single bidder, was followed by a price rise. This evidence suggests that the price effect of a large on-chain transfer depends on the motive the market infers behind it, not on the amount moved alone.¹⁰

The most direct empirical anchor is the most recent. In July 2025 a holder dormant since April 2011, the month of Satoshi's last known communication (the private emails to Hearn and Andresen; the last public forum post was December 2010), moved about 80,000 BTC and sold the whole position, roughly nine billion dollars, through a single institutional OTC desk in a disclosed estate-planning transaction. The price fell a few percent and recovered within days.²⁸ This is the closest thing on record to a Satoshi sale: same dormancy vintage, one-fourteenth the size, run through exactly the channel Track 1 describes. As an observed event, it is a firmer anchor than the unaudited practitioner estimates of OTC impact that such arguments usually rest on, and it fits the peer-reviewed finding that impact from flow the market reads as uninformed decays almost completely over time.¹⁴

A reasonable point estimate for the permanent cumulative impact of a patient ten-year Satoshi sale, under disciplined execution and continued demand growth, is therefore in the mid-single to low-double digits, with the aggressive assumptions reaching the mid-twenties. Even that upper figure is far below the share-of-current-price loss the existential-tail reading implies.

3.2. The Information Channel—Section 2's reflexivity argument holds that identity revelation, not mechanical volume, would drive a catastrophic price drop. Judging it means separating what can be bounded from what can only be guessed. The event-study literature shows that only the unexpected part of news moves prices,¹⁸ and that reactions to fundamental news run the gamut, from delayed under-reaction and drift to overreaction and reversal.^{19,20} For a one-of-a-kind event with no precedent, an authenticated Satoshi action, the market's prior is not observable, so the surprise cannot be known in advance. We therefore make no point forecast of the size, sign, or persistence of the reaction. The limit cuts both ways: it equally forbids the confident existential forecast the tail-risk view depends on. What it leaves us is the bounded mechanical part (Section 3.4) and the record of nearby events.

Two natural experiments are on record. On April 8, 2026, the most prominent identity reporting in Bitcoin's history named a specific, living, reachable person as the leading Satoshi candidate.^{9,29} Bitcoin was essentially flat that day, with steady derivatives open interest and no liquidation cascade. Either the market discounted the identification, which the named person denied and whose stylometric support the investigation's own consultant called inconclusive, or marginal flows simply do not respond to founder news; both readings contradict the claim that attention to identity is itself existential. The second experiment is the July 2025 sale described in Section 3.1, which paired a reveal (a fourteen-year-dormant wallet of Satoshi's own vintage moving) with an actual sale and produced a low-single-digit, fully reverting response. Neither event measures the response to an authenticated Satoshi action: the first was an unconfirmed identification, the second was one-fourteenth the size, and two points are not a distribution. But they anchor the market's observed sensitivity in the two nearest available cases, and in both the sensitivity was small and short-lived. A catastrophic interpretation therefore requires a sharp discontinuity between these analogues and an authenticated Satoshi event.

One conditional channel deserves explicit mention: institutional compliance. ETF sponsors, regulated custodians, and corporate treasuries work under compliance rules that ignore founder news for ordinary allocation decisions but do track regulatory exposure. If a named Satoshi is a

national or resident of a country under international sanctions, has an unresolved tax liability, or faces active litigation, compliance teams may pause new allocations pending legal review. The effect is temporary and symmetric: allocations resume once review ends. Its size and length depend on the specific identity and exposure, not on the bare fact of a reveal.

A second channel runs the other way. For an asset with no cash-flow floor, both demand elasticity and the float depend on the narrative: a Patoshi sale that dented the upside story would pull demand in and push more supply onto the market at the same time, so effective elasticity is lowest exactly when a sale is most likely. The mechanical bound of Section 3.1 is therefore a bound on the supply arithmetic, not on total repricing in a bad narrative; Appendix A.2 shows the amplifying and dampening adjustments side by side.

The useful distinction the bound supports is between an existential and a material drawdown. Existential, the implicit claim of the tail framing, means permanent loss of a large share of value. Material means a path on the order of the mechanical bound plus a transient overshoot of unknown size, within Bitcoin's ordinary yearly volatility and historically followed by recovery. For unleveraged holders the distinction is decisive. For leveraged ones it is not: funds and digital-asset-treasury vehicles whose financing is marked to net asset value can be forced to sell into a material drawdown, and the 2025-26 stress among treasury vehicles trading below the value of their holdings, with covenant-driven sales, shows the propagation machinery is real. Section 7 returns to it. What the record does not support is the stronger claim that founder news on its own, without these leverage channels, commands a large lasting repricing.

In sum, the lasting repricing from any Patoshi event is a bounded total spread times the market's revision in the probability of an eventual sale (Section 3.4). The transient part cannot be forecast, and we do not forecast it; and the two nearest events on record produced reactions that were small, short-lived, or both. The paper bounds the durable supply-driven component of the reaction rather than forecasting the total price path: whatever the probability revision turns out to be, the durable repricing is capped by the absorption arithmetic, and the direction of the response to a confirmed burn or non-recovery follows from the supply identity (Section 6.2), not from a prediction of its size or path. Resting on that arithmetic and on the revealed-preference evidence, the argument needs no forecast of how the market would react to news.

3.3. Optimal Disposition Under Pure Wealth Maximization—Combining the absorption arithmetic of 3.1 with the information analysis of 3.2, a wealth-maximizer's problem reduces to choosing among versions of patient sale. The holder could announce the program in advance, keeping pricing credible at the cost of the initial information shock. The holder could sell quietly through many OTC desks, accepting the operational cost and the risk of eventual identification. Or the holder could cap the pace of an announced program in code, using CLTV timelocks (BIP 65, activated December 2015)³⁰ or CSV timelocks (BIP 112, activated May 2016),³¹ turning a signed promise from cheap talk into a protocol-enforced limit. This announced-and-capped version is like a Rule 10b5-1 plan, but stronger, because the signature from the Patoshi keys cannot be forged and the timelock is enforced by the protocol rather than by a rule.

A further version reverses the order: the holder first builds a short position in Bitcoin derivatives sized against the coins, then moves the coins and closes both legs together with a time-weighted algorithm. The appeal is that the repricing triggered by detection lands on the derivative counterparties rather than on unhedged coins, locking in pre-reveal prices; for the holder, the information shock becomes roughly a wash. Two facts bound the strategy. First,

large short positions are visible: in October 2025 a single actor's leveraged Bitcoin and Ether perpetual shorts of more than one billion dollars on a public on-chain venue were spotted by surveillance within hours of being opened, so the signature of such a program would not stay hidden. Second, scale binds. Total Bitcoin futures open interest across venues ran about 30 to 45 billion dollars in the first half of 2026, with CME about 10 billion of that, so fully hedging the roughly 92-billion-dollar position would mean becoming a short side two to three times the size of the entire futures market, backed by tens of billions in outside collateral the Track 1 holder does not have, all while funding rates and open interest broadcast the program. The realistic version is a partial hedge that trims the temporary and overshoot costs the seller bears. The permanent part is unchanged: counterparties reprice it on detection, ahead of the flow. This version actually strengthens the section's conclusion, since it pushes the wealth-maximizer's outcome closer to the mechanical bound. We take no view on where such a program would stand under derivatives anti-manipulation law.

In every version, the wealth-maximizer nets on the order of 50 to 100 billion dollars over the sale period, against roughly zero from an outright burn. For a holder who cares only about wealth, burning is strictly worse than patient sale on every horizon. So the paper has nothing to tell such a holder except that the best strategy is patient sale, and the market should not price that outcome as an existential tail risk. How strongly the claims of 3.1 and 3.2, and the market implications of Section 6, can be stated all turn on one unobserved quantity, the share of the Patoshi position that the current price already treats as permanently out of float.

3.4. A Consistency Ledger for the Dormancy Premium—This section develops a ledger for that unobserved quantity. Writing the bookkeeping out lets the paper's separate claims be checked against each other, and shows they hold together for every admissible value of that share. The formal version, with its constant-elasticity demand schedule, is in Appendix A.7. In words, the argument runs as follows.

Confirmation that the coins are gone for good, and confirmation that they have all been sold, mark the two ends of a price interval. Ignoring any unresolved-state discount, the current price sits inside this interval, at a point set by the share the market already prices as eventually returning to float. With such a discount, the current price sits below that interior point, and in principle can fall below the sale-confirmed endpoint. The width of that interval is fixed by the absorption arithmetic of Appendix A, not by the unknown share: about 11 percent at the central elasticity, narrowing to about 5 percent in the elastic case and widening to about 27 percent in the inelastic case. We do not try to estimate the share; the point of the ledger is that what follows holds whatever it is.

First, the gain from a confirmed burn and the loss from a confirmed but unexpected sale are complementary: each is a slice of that one fixed interval, so they cannot both be large. The larger the share the market has already priced as permanently gone, the larger the sale downside and the smaller the burn upside; the two always sum to the same fixed interval. Second, the Appendix A figures are the full-surprise case, in which nothing was priced in, and so are upper bounds on the unexpected part of a sale. Third, a sign-of-life reveal with no coin movement reprices only the revision in that share which the reveal itself causes, and the revealed-preference evidence of Section 4 is the reason to expect that revision to be small.

The Section 6 claim about the response to a confirmed burn has to be read as proportional to the residual sale probability still embedded in the price: if on-chain practice has already absorbed

most of the dormancy discount, the supply part of the burn response is positive but moderate, with any additional effect coming from retiring the uncertainty premium. And the existential-tail view now needs either a demand elasticity far below any proposed value or a reflexive demand-side amplification of the kind discussed in 3.2 and Section 7. The doom case and the burn-rally case are complementary shares of the same bounded total, and thus both cannot comprise a majority.

4. Track 2: The Observable Satoshi Profile

This section studies a holder whose identity is unknown but whose profile is partly readable from sixteen years of behavior. We stay agnostic about whether the holder is Adam Back, another early cypherpunk who has not drawn media attention, or someone no outsider has identified. Unlike Track 1, which gave a number, Track 2 maps the range of possibilities: the motivations consistent with the record, and the outcome each would justify. We do not pick a single most-likely outcome.

4.1. Revealed Preference: What Sixteen Years Rule In and Rule Out—Sixteen years of Satoshi dormancy is a behavioral dataset. A holder who valued more money above all else would not likely have stayed silent through four bull markets (2013, 2017, 2021, 2024), each a good chance to exit. Even a clumsy partial sale in any of them would have raised sums large enough to swamp almost any reasonable spending or bequest plan. The holder did none of this. The prior on pure wealth-maximization, the premise of Track 1, is therefore empirically weak.

The record also narrows the holder's capabilities. Satoshi's writing in the whitepaper, the early BitcoinTalk posts, and the reference client's source code shows command of applied cryptography, distributed systems, and economic design that points to a small subset of the cypherpunk community active from 2007 to 2010. The operational security held across two years of pseudonymous communication, the clean exit in April 2011, and the sixteen years of silence since show discipline that narrows the profile further. This matters later: a holder of this competence can execute any disposition, including the cryptographic inheritance and destruction arrangements of Section 5, cleanly and without help.

So the record establishes the holder's capability, cryptographic skill, and operational discipline to carry out any disposition. It also makes pure wealth-maximization a weak explanation for the silence—though dormancy by itself cannot separate deliberate restraint from lost keys, incapacity, death, or group deadlock. What it does not establish is the motive behind the dormancy. The whitepaper's ideological cast, hard money, supply discipline, and disintermediation from central institutions hints at an orientation often associated with what is now called the "Bitcoin Maximalist" tradition. Whether that orientation, or some other preference, actually governs the holder's behavior is the question the next section takes up.

4.2. Alternative Preference Sets Consistent with Dormancy—Dormancy fits many sets of preferences, not one. Before naming likely outcomes, we lay out the preferences that would explain the behavior we see.

Ideological Restraint. Taking up the orientation noted in §4.1, the holder treats Bitcoin's supply discipline and the symbolic weight of the Satoshi position as matters of principle and leaves the position untouched as a commitment. This is the maximalist case: the view that Bitcoin alone, with its fixed supply, is the legitimate digital money, and that its supply discipline must not be diluted by rival protocols, contentious forks, or accommodation of centralizing intermediaries. It is the case most of this paper focuses on.

Privacy Above All. The holder's main aim is to stay pseudonymous. Any disposition, even a careful sale, creates detection risk that outweighs the money. Dormancy is the lowest-risk choice.

Having Enough. The holder reached a point of having enough long ago, through other wealth, a modest life, or both, and gains little from more. Dormancy is the default when there is no positive reason to act.

Lost Keys or Incapacity. The holder has lost the Satoshi keys, is incapacitated, or has died with no successor plan. Dormancy is mechanical, not chosen. A variant: Satoshi was more than one person, and disagreement has blocked any coordinated action.

Myth Preservation. The holder judges the position's value as a permanent, untouched reserve to be worth more than anything spending it could buy, and keeps the myth intact.

Legal Caution. The holder sees realizing the wealth, or revealing an identity, as inviting tax, regulatory, or criminal exposure (money-laundering characterization, sanctions, securities treatment) whose expected cost beats the gain.

These motivations are not mutually exclusive. Ideological restraint and privacy likely travel together in any profile that fits the technical record. Lost keys and incapacity look the same as the others without positive evidence. The group-stalemate variant under "lost keys or incapacity" is worth a note: a Satoshi of several people whose preferences now diverge, and who therefore cannot agree to act, produces the same observable pattern as a single holder's ideological restraint, since inaction is the default either way. The analysis below leans on the outcomes consistent with ideological restraint and privacy, but notes that having enough, lost keys, myth preservation, legal caution, and group stalemate are all consistent with the record and would look much the same in the near term.

4.3. *The Adversarial Dead-Man's Switch*—One motivation we have not yet covered is adversarial. A maximalist holder might read later developments, the centralization of mining and custody, regulatory capture through KYC rules, or dilution of supply discipline through forks as betrayals of the project, and arm a "dead-man's switch" that sells or dumps the position if specified events occur. This is cryptographically feasible and has been discussed informally among cypherpunks.

Three things weigh against it as the dominant motive. The holder has had cheaper, more surgical ways to signal hostility over sixteen years—public denunciation, funding a rival protocol, a paper on protocol correctness—and has used none. A holder who could build a hostile switch could as easily build a constructive one, so the choice of a hostile design would itself reveal a preference the record does not support. In addition, a dormant hostile switch is fragile: it must track protocol developments for decades, resist manipulation, and never fire by accident, whereas destroying the keys at death removes those failure modes at the cost of the hostile capability. We do not rule the switch out; we rank it below the non-hostile outcomes on the strength of the record.

4.4. *Terminal Dispositions Consistent with the Record*—Three outcomes fit the motivations of 4.2 and 4.3 best. We list them in rough order of fit with the record. The ordering is ordinal, not a probability assignment.

i. *Continued Dormancy Ending in Permanent, Cryptographically-Enforced Loss of Access.* Over a remaining life of some decades, the holder stays silent and arranges for the Satoshi keys to become permanently unrecoverable at or near death, using one of the cryptographic tools in Section 5. This needs no announcement, no reveal, no pre-commitment apparatus, no legal

machinery, and no change from the sixteen-year status quo. It fits the ideological, privacy, and myth-preservation motivations best.

ii. A Silent, Unattributed Burn, In Whole or In Part. At a time of the holder's choosing late in life, a transaction from the Satoshi addresses to an OP_RETURN output takes the position, or most of it, out of float; Appendix B covers the mechanics and how anyone can verify them. A burn is an action rather than an absence, so it is a little more exposed operationally than key destruction, but pseudonymity can hold because reading the event does not require knowing who did it. A practically useful variant keeps a small slice for option value: sending about 99 percent of the cluster (around 1.136 million BTC) to an OP_RETURN output and about 1 percent (around 11,500 BTC, roughly one billion dollars at current prices) to a fresh non-Satoshi address looks, at the market's resolution, the same as a full burn while keeping some optionality. The bullish signal from a 99 percent burn is effectively the same as from a 100 percent burn. This outcome fits ideological restraint and myth preservation, and, through the retained slice, a residual of having-enough or legal-caution motivation.

iii. A Hostile Switch. Programmed sale or dumping triggered by protocol developments, as in 4.3. Ranked below the two above on the record, but not ruled out.

The ordering is ordinal and rests on the record. It would shift if a motivation not listed in 4.2 came to light. It is reinforced, not upset, by evidence that the holder is incapacitated, that the keys are lost, or that Satoshi was a group whose members now disagree: each of these makes continued dormancy more likely as the realized outcome. We flag these sensitivities rather than try to price them.

For readers who want the ordering carried toward the pricing recommendation of Section 6, the bearish branch can be explored through reader-side sensitivity cases rather than assigned a probability. Let q be the probability that the outcome is bearish, a wealth-maximizing sale or a hostile dump rather than dormancy ending in lost access or a burn. For illustration, one can test three reader-chosen cases rather than assign a probability: $q = 5$ to 15 percent, $q = 25$ to 40 percent, and $q = 50$ percent, corresponding to a reader who accepts the revealed-preference argument, one who is agnostic, and one who discards the inference from dormancy. The point of showing all three is that the Section 6.2 recommendation does not depend on the choice. Because even the bearish branch is bounded by the absorption arithmetic of Section 3.4, the probability-weighted downside is a fraction of an already bounded total at every value, and the qualitative conclusion (that the position should be priced as effectively-removed supply carrying a small, bounded residual sale risk) survives even the skeptical case. These are stress cases for the reader, not estimates; in keeping with Section 3.2, the paper assigns no probabilities of its own.

4.5. Why the Likely Terminal States Are Non-Bearish—The first two outcomes reach the same physical supply result: about 1.148 million BTC, or very nearly so in the retained-slice variant, is permanently out of float. They differ in verifiability, which matters for pricing (Section 3.4). A provable burn settles the market's residual sale probability in one block; it is the only outcome that delivers a discrete, fully credible confirmation. A key-destruction arrangement, however sincere, can never be verified from outside, so confirmation arrives only gradually, as the market updates on continued dormancy, and part of the upside is delivered slowly and part, in principle, never. The two are physically the same for supply and different for price. Either way, sooner or later, the market gets a permanent subtraction of about 5.7 percent of mined supply.

The third outcome, the hostile switch, would be bearish but fits the record least, for the reasons in 4.3. On the record-based ordering, the likeliest outcomes are neutral to mildly positive for Bitcoin's effective supply, not the loss the tail-risk view implies. This is not a strong bullish base case. It is the claim that the motivations most consistent with the record lead to outcomes that are not bearish, and that the bearish outcome is the one requiring the largest departure from the observed profile. The conclusion is admittedly over-determined: dormancy, having enough, lost keys, death without a successor, group stalemate, and a burn all map to the same non-bearish supply result, so "not bearish" is robust precisely because so many different motivations converge on it. That convergence is substantive, not true by construction, because the hostile switch of 4.3 is a genuine bearish outcome the framework allows; what holds it down is the sixteen-year record, not the accounting.

5. Estate Planning: Cryptographic Primitives Versus Conventional Trust Machinery

A standard treatment of a position this large would turn here to trusts, tax planning, and transfer mechanisms. The problem is not hypothetical: the July 2025 sale of more than 80,000 BTC dormant since April 2011 was disclosed by the executing desk as part of the holder's estate planning, a real case of a Satoshi-era holder facing exactly this question.

A conventional trust imposes three costs on this kind of holder. First, disclosure: the settlor's identity goes to the trustee, into the trust documents, and, depending on jurisdiction and entity structure, into beneficial-ownership registries and other regulatory filings. Second, counterparty exposure: the trust carries lifetime exposure to trustee discretion, to beneficiary litigation, and to administrative processes that can be subpoenaed or surfaced in estate proceedings. Third, process cost: trust administration is slow and expensive next to the cryptographic tools the holder has used for sixteen years. Most large holders can tolerate these costs, because their identity is already public and there is no good alternative. For a holder who has kept full cryptographic self-custody throughout, the costs are a break from demonstrated preferences, and cryptographic substitutes preserve the pattern.

The obvious alternative, simply handing private keys to adult heirs, is also a break from preference. Heirs usually lack the operational security the holder has kept for sixteen years, and once they hold the keys, nothing binds them to the holder's wishes about dormancy or disclosure. A holder who has protected this position by trusting no one is unlikely to end the program by trusting his children with bare keys.

The natural substitutes encode the holder's preferences into the mechanism rather than handing them to a person, and several are production-grade today. Shamir Secret Sharing splits a key into m -of- n shards so that reconstruction needs a quorum;³² spreading shards across heirs, trustees, and separated custodians builds in delay, consensus, or conditional reconstruction. Multisig wallets with CLTV (BIP 65) or CSV (BIP 112) timelocks block any unilateral move until after events the holder specifies, a fixed date, an elapsed time, or a protocol-observable trigger. Modern threshold-signature schemes such as MuSig2 and FROST produce on-chain transactions that look like ordinary single-signature ones and allow m -of- n reconstruction without revealing the threshold.^{33,34} A dead-man's switch that releases shards or sends a predetermined transaction after a long silence is straightforward to build on these tools. Deliberately destroying

the shards at death makes the coins unrecoverable by anyone, heirs included, turning the bequest into a contribution to Bitcoin's supply discipline.

These tools are ones the holder understands natively and trusts by construction, and they keep pseudonymity across generations in a way conventional trusts are less well suited to. The claim is not that trusts are worse in general, but that for a holder with the preferences of Section 4.1, cryptographic substitutes may win on the dimensions that matter most here: disclosure, counterparty exposure, and process cost.

A structural point connects this to the economics of trust law. Modern trust and estate practice exists to handle the principal-agent problem that arises when a settlor cannot personally carry out a multi-decade, preference-consistent plan after death. The trustee is the settlor's agent, and the apparatus of trust law, fiduciary duty, accounting, and beneficiary standing align the agent with the settlor's prior wishes. The cryptographic tools change the problem: a timelock, a quorum of shardholders bound only to a mechanical reconstruction rule, or a programmed destruction instruction involves no agent to incentivize or monitor. The settlor's preferences are written straight into the mechanism that carries them out. The agency problem is not merely cheaper to manage; if the mechanism is well designed, the discretionary part is sharply reduced, though shardholders, heirs, and custodians can remain quasi-agents at the edges. That is a stronger reason to substitute than ordinary cost-minimization alone suggests.

One tax point is worth noting. Under U.S. Internal Revenue Code Section 1014, property held at death gets a stepped-up basis equal to its fair market value at death.^{35,36} But claiming the step-up means reporting the coins as part of the estate, which breaks the pseudonymity the profile has protected for sixteen years. A holder who places pseudonymity and supply discipline above tax savings would forgo the step-up, and the bequest to heirs becomes the holder's continued participation in Bitcoin rather than the coins as a spendable asset.

6. Market Implications

The two-track analysis yields two main findings: one, the mechanical downside is bounded even under Track 1's purely financial assumption that the holder cares only about money; and two, the outcomes most consistent with the record are neutral to mildly positive for Bitcoin's effective supply.

6.1. What the Market May or May Not Have Already Priced In—Crypto-native participants are sophisticated, and none of this paper's pieces is wholly new. Lerner's identification of the Patoshi cluster has been public since 2013, OP_RETURN has been standard since 2014, Bradbury's 2014 piece raised burning informally, and the lost-coins adjustment is routine in on-chain research. It is plausible that much of the probability weight on permanent dormancy is already in the price through some form of that adjustment. The April 2026 episode fits this reading. The point is testable: the size of the dormancy discount, and changes in it, can be estimated with event studies around large dormant-wallet movements and credible Satoshi rumors, of which the July 2025 sale and the April 2026 reporting are the two most recent and cleanest cases, and of which the short-horizon design of Ante and Fiedler is a natural template.¹⁰ We do not run that test here, but the design exists and these two episodes are its first data points. We make no attempt to measure how much of the position the market already prices as permanently gone, and, as in Section 3.4, the paper's claims are built to hold for every value of it.

Three parts of the argument are less present in current practitioner writing. The quantitative upper bound on the mechanical bear case derived in Section 3.1 does not, as far as we can tell, appear in published or practitioner sources. The cost case against conventional trusts for this profile has not been made in the estate-planning or asset-management literature. And the explicit map of Track 2's outcomes, with its ordering and its list of alternative motivations, is, to our knowledge, new. Whether any of this is incorporated in current prices is a separate empirical question we do not settle.

6.2. Implications—This paper's claims are structural, and are not claims that the market is mispriced. The bear-case bound of Section 3 rests on Bitcoin's current liquidity and execution capacity, and the outcome map of Section 4 rests on the sixteen-year record. Both are observable independent of price, and the implications below follow from that structural account rather than from any assumption about what the market currently prices (see also Section 6.1).

First, any verifiable event matching one of Track 2's first two outcomes, in particular a confirmed death of a profile-matching candidate followed by evidence of non-recovery, or a burn of the position, would likely read as a positive signal of a confirmed supply subtraction. The size of the mechanical response is set by the ledger of Section 3.4: proportional to the residual sale probability still in the price, plus the retirement of the uncertainty premium, and bounded by the same arithmetic that bounds the mechanical bear case. The supply component carries an unambiguous positive sign under every calibration; the total market reaction may bring in other channels (identity, legal, tax, or macro context), whose sign and size we do not predict. The two events also differ in kind: a burn delivers the repricing in one block, while non-recovery is confirmed only gradually (Section 4.5), so the burn is the only outcome that produces a discrete event at all.

Second, practitioners do not, on the whole, hedge "Satoshi risk" as a named state; they trade Bitcoin volatility, to which a Satoshi event is one contributor among macro shocks, regulatory moves, exchange failures, and leverage unwinds. The analysis here says that contribution should be sized as a material-drawdown scenario, on the order of the mechanical bound plus a transient overshoot of unknown size, not as a separate existential state worth deep out-of-the-money protection at any price. For unleveraged holders, the material-versus-existential distinction is decisive. For leveraged holders and treasury vehicles financed against net asset value, a material drawdown is itself serious, and the propagation machinery shown in the 2025-26 treasury-vehicle stress is real; Section 7 returns to it.

Third, pricing models that treat the Satoshi coins as circulating supply discounted by a probability of sale should be replaced by models that treat them as effectively removed supply carrying a small residual probability of wealth-maximizing sale, itself bounded by the absorption arithmetic of Section 3.

7. The Broader Class of Reflexive Liquidation Problems

The Satoshi case is one instance of a broad class in financial economics: positions whose sale value is set partly or wholly by the act of selling. The class is not new, but its members have usually been studied separately rather than together. A preliminary taxonomy follows.

Controlling Founders of Listed Companies. When a founder holds a stake well above the public float, a sale both adds supply and removes the signal of founder conviction that partly

holds the price up. Barclay and Holderness and the later blockholder literature document the price effects.^{15,37–39} The usual fixes, charitable transfers plus structured secondary offerings, are partial analogues to Track 1's patient sale.

Estates of Dead Artists. The blockage discount in U.S. tax law, sustained at 37 percent in *Estate of David Smith* and at an effective 37 percent in *Estate of O'Keeffe*, recognizes that selling a large inventory of one artist's work at once depresses prices per work.^{26,40} The usual fix is staged sale through a foundation or estate, in effect a decades-long schedule.

Insider Stakes in Private Companies. With no public market, an early holder's attempt to sell through secondaries can signal to new investors that the company is overvalued, depressing both the stake's price and the valuation of later rounds.

Leveraged Treasury Vehicles Holding the Asset Itself. A 2025-26 case closes the loop: listed digital-asset-treasury companies hold Bitcoin against narrative-sensitive capital structures, and when their market value falls below the value of their holdings, covenant and financing pressure can force staggered sales into weakness. A Patoshi move is one of several possible triggers of such a cascade, and the amplification it could cause may exceed the direct Patoshi flow bounded in Section 3. This does not change the mechanical bound, which is about the holder's own flow; it identifies the main path by which a material drawdown could spread, and it belongs to this class in its own right.

The Satoshi case shares the class's structure but differs in three ways that matter in 2026. First, Bitcoin's market, unlike a single stock or a private company's secondary market, has grown liquid enough to absorb the full position through patient sale, which bounds Track 1's mechanical bear case in a way the classic blockholder case is not. Second, the holder's identity is unknown, so the information asymmetry is not about a known person's changed circumstances but about the prior question of whether the holder is alive, rational, and paying attention, a different channel from anything in the blockholder literature. Third, Bitcoin offers a uniquely credible destruction option: a transaction to an OP_RETURN output is a voluntary, verifiable, irreversible supply subtraction (Appendix B), and no other asset in this class gives its holders that option.

That destruction option has a theoretical consequence. For an asset whose value rests partly on expected supply limits, a large holder's credible option to destroy is itself a positive contribution to the price, whether or not it is ever used. A marginal buyer can reasonably assign some probability to the destruction event and price expected supply accordingly. The option's credibility rests on the verifiability detailed in Appendix B: it is the provable burn, not key destruction, that makes the option contract-grade. The asymmetry favors the asset: the destruction option adds supply discipline in expectation, the sale option adds supply in expectation, and the sale carries low probability for the holder who actually exists under the Section 4 profile.

The broader implication is that the study of illiquid and reflexive positions should account for voluntary-destruction options where they exist, and treat their absence in traditional assets as a real constraint on those holders. Bitcoin is unusual in offering one, and that option, available to the Satoshi holder and to no comparable holder elsewhere, is what most distinguishes this overhang from the tail risk it is taken to be.

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Author Contributions

KTU is the sole author of this paper.

Conflict of Interest

The author declares that they have no known conflicts of interest as per the journal's Conflict of Interest Policy. As a matter of disclosure, the author's first real education about Bitcoin came in 2017 from a friend who ran a single mining machine in his garage. The author bought 1 BTC at that time, for fun, and has not sold it; that is the author's only financial interest in Bitcoin.

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³ Throughout this paper, "Satoshi" and "Nakamoto" mean the pseudonymous creator and the associated Patoshi mining cluster; they do not mean the listed bitcoin-treasury company Nakamoto Inc. (Nasdaq: NAKA), which shares the name but has nothing to do with the holder studied here.

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Appendix A: Scenario Arithmetic for the Track 1 Absorption Bound

This appendix gives three scenarios bounding the cumulative price impact of a patient OTC sale of the 1.148 million BTC Patoshi position, relative to the no-sale case. The analysis is stylized and partial-equilibrium, and the scenarios are illustrative bounds under stated inputs, not point forecasts and not calibrated estimates. Their job is to discipline Section 3's qualitative claim that the mechanical bear case is bounded, to make the sensitivity to each assumption explicit, and to cross-check the result against an independent method (A.8).

A.1. Common Parameters—Position Size: 1.148 million BTC, matching the Patoshi cluster identified in Lerner.^{4,5}

Lost Coins: The most-cited segmentation study estimates 2.78 to 3.79 million BTC permanently lost as of 2017 (Chainalysis, reported in Roberts and Rapp);⁷ since losses accumulate, we use the high end as the central assumption. Dormancy-based upper envelopes used in on-chain research run much higher but deliberately over-count intentional holders, and they include the Patoshi coins themselves. For peer-reviewed active-supply analysis see Ambrosia, Dorrell and Stockwell.⁸ Because a larger lost-coins figure thins the float and raises estimated impact, A.6 reports the bound under the adverse envelope as well as the central case.

Freely-Circulating Float F : Mined supply minus lost coins minus the Patoshi position, about $20.01 - 3.79 - 1.148 \approx 15.1$ million BTC under the central assumption. So $P/F \approx 7.6$ percent. The position is excluded from the float so that its sale is counted once, as added supply, rather than as both existing float and added supply.

Reference Price: 80,000 USD per BTC, roughly the late-April 2026 level (Bitcoin traded near 76,000 to 78,000 USD over April 24 to 30, 2026). This is a round figure for scaling, not a dated quote, and all dollar figures scale linearly with it. It is not the 62,600 USD level of April 8, 2026, the day of the identity reporting discussed in Section 3.2.

Demand elasticity ϵ_D is defined so that a permanent supply increase of fraction x produces a price change of about $(1+x)^{-1/\epsilon_D} - 1$. No published study estimates this structural parameter for Bitcoin: the closest peer-reviewed work, Jalan, Matkovskyy and Urquhart, estimates dynamic demand elasticities with respect to price, transaction fees, and energy cost, and shows Bitcoin demand elasticity is estimable and non-degenerate, but it does not identify the price response to a permanent float expansion.⁴¹ The range $\epsilon_D = 0.3$ (very inelastic) to 1.5 (closer to equities) is therefore a heuristic sensitivity range, not a confidence interval, and the paper's quantitative claims rest on triangulating this arithmetic with the independent methods of A.3 and A.8, not on any calibration of ϵ_D .

Real Volume: The participation-rate arithmetic assumes real (non-wash) spot volume of 10 to 20 billion USD per day. Reported volumes overstate real ones, historically by a large factor;⁴² even under an extreme discount to 1 billion per day, the program's participation rate is about 2.5 percent, within the range that execution practice treats as low-impact, and the A.8 cross-check prices the 5-billion case explicitly. The participation rates in A.4 are computed at the 15-billion-dollar midpoint of this range.

*A.2. Partial-Equilibrium Impact by Elasticity—*In a partial-equilibrium model with constant demand elasticity, fully selling the Patoshi position expands freely circulating supply by about 7.6 percent, for a price change relative to the no-sale case of about $(1.076)^{-1/\epsilon_D} - 1$. The table reports this across the heuristic elasticity range.

Elasticity ε_D	Cumulative Partial-Equilibrium Impact
1.5 (equity-like)	approximately –4.7 percent
0.7 (central)	approximately –9.9 percent
0.3 (highly inelastic)	approximately –21.6 percent

Elasticity is the dominant source of variation. Halving ε_D from 0.7 to 0.3 roughly doubles the impact; doubling it from 0.7 to 1.5 roughly halves it. Demand growth over the sale period affects the absolute price path but, under the constant-elasticity log-linear form used here, not the relative impact between the sale and no-sale cases. The analysis is static: it holds the demand schedule fixed and treats market-makers as passive. Dynamic adjustment runs both ways, and we note both. Market-makers who anticipate an announced program would pre-position ahead of the flow, lowering realized impact. Conversely, for an asset with no cash-flow floor, demand and offered float depend on the narrative (Section 3.2): a sale that dented the upside story would pull demand in and add supply at once, raising realized impact in bad states. Read the static figures as a central tendency between these dynamics, capped above by the adverse-stack calculation of A.6.

A.3. Empirical Anchors: Temporary Versus Permanent Impact—The partial-equilibrium figure is the permanent part, attributable to the supply shift. Execution adds a temporary part that the anchors bound. The Saxony 2024 episode (49,858 BTC in twenty-three days of publicly tracked tranches; a 13 to 15 percent decline confounded with the concurrent Mt. Gox distribution announcement and leveraged-long liquidations; substantial recovery within weeks of the final tranche) bounds the temporary impact of maximally visible, compressed, public selling: large while underway, mostly reverting afterward, implying a permanent part near zero for a 0.3-percent-of-float sale. The U.S. Marshals auctions (muted to positive responses to institutional placement) and the July 2025 sale of about 80,000 BTC through a single OTC desk (a few percent, reverting within days) bound the temporary impact of disciplined institutional selling. The pattern across anchors, large-but-reverting under public selling and small under institutional selling, is the signature of a temporary impact that decays around a small permanent core, consistent with the near-complete long-run decay of uninformed-flow impact documented in Donier and Bonart.¹⁴ For the scenarios we add an execution-friction allowance of 1 to 2 percent (disciplined OTC), 2 to 3 percent (base), or 3 to 5 percent (mixed public selling) to the permanent part.

A.4. Three Scenarios—Scenario A (conservative). $\varepsilon_D = 1.5$, disciplined OTC execution, 12-year horizon, participation rate approximately 0.14 percent of real daily spot volume, pace approximately 95,600 BTC per year. Permanent impact approximately –4.7 percent. Execution friction approximately 1 to 2 percent. Total cumulative impact relative to counterfactual: approximately –6 to –7 percent.

Scenario B (base). $\varepsilon_D = 0.7$, disciplined OTC execution, 10-year horizon, participation rate approximately 0.17 percent of real daily spot volume, pace approximately 114,800 BTC per year. Permanent impact approximately –9.9 percent. Execution friction approximately 2 to 3 percent. Total cumulative impact: approximately –12 to –13 percent.

Scenario C (aggressive). $\varepsilon_D = 0.3$, mixed execution quality (partial public venue), 5-year horizon, participation rate approximately 0.34 percent of real daily spot volume, pace approximately 229,600 BTC per year. Permanent impact approximately –21.6 percent. Execution friction

approximately 3 to 5 percent. Total cumulative impact: approximately -25 to -27 percent.

A.5. Sensitivity—The dominant sensitivity is to elasticity; the second is to the lost-coins assumption (A.6). Scenario C approaches the Saxony episode’s headline decline under its adverse stack, with the key difference that the Saxony decline largely reversed while Scenario C’s permanent part would not; Scenario A approaches the institutional-execution anchors; Scenario B sits between them.

A.6. Robustness and Takeaway—Under the adverse lost-coins envelope (treating the dormancy-based upper bound of roughly 7.8 million BTC, minus the Patoshi coins it includes, as genuinely lost; this is the peak of Glassnode’s “Hodled or Lost Coins” metric,⁴³ about 7.80 million BTC in August 2023), F falls to about 12.2 million and P/F rises to about 9.4 percent; the permanent impact becomes about -5.8 percent ($\epsilon_D = 1.5$), -12.0 percent (0.7), and -25.9 percent (0.3), and the aggressive total reaches about -29 to -31 percent. So the existential-tail framing fails even under the assumptions most favorable to it: envelope losses, the most inelastic proposed demand, and adverse execution together bound the cumulative impact near -30 percent relative to the no-sale case, a material drawdown but not a collapse. Under the central lost-coins assumption the base case stays about -10 to -13 percent; under the adverse envelope the same central-elasticity case rises to roughly -14 to -15 percent after execution friction. No plausible calibration within this mechanical supply model supports valuing the disposition at a large fraction of the pre-event price. The mechanical bear case is bounded by the arithmetic.

A.7. The Consistency Ledger, Formally—Let F and P be as in A.1, let $\pi \in [0, 1]$ be the expected fraction of P the market currently prices as eventually returning to float, and let $u \geq 0$ be a residual discount for the unresolved state. With constant-elasticity demand $p(S) \propto S^{-1/\epsilon}$, the burn-confirmed price is $p(F)$, the sale-confirmed price is $p(F + P)$, and the current price is approximately $p(F + \pi P)(1 - u)$. Define $T = (1/\epsilon) \ln(1 + P/F)$, the total log spread between the two confirmed states: $T \approx 0.049$ ($\epsilon = 1.5$), 0.104 ($\epsilon = 0.7$), 0.243 ($\epsilon = 0.3$). The burn-confirmed log upside from the current price is $(1/\epsilon) \ln(1 + \pi P/F) - \ln(1 - u)$, and the sale-confirmed log downside is $(1/\epsilon) \ln((F + P)/(F + \pi P)) + \ln(1 - u)$. To first order these are $\pi T + u$ and $(1 - \pi)T - u$. The two supply components, $(1/\epsilon) \ln(1 + \pi P/F)$ and $(1/\epsilon) \ln((F + P)/(F + \pi P))$, sum exactly to T ; this is the complementarity invoked in Section 3.4, namely that the confirmation upside and the unanticipated-sale downside are shares of one bounded supply spread. The unresolved-state discount u is handled separately: if it resolves on either outcome, it adds to the burn upside and offsets the sale downside by the same amount, so it cancels in the sum and the two total returns also sum to T . Note that with $u > 0$ the current price sits below the interior point $p(F + \pi P)$, and a confirmed sale can even raise the price if u exceeds the supply loss $(1 - \pi)T$. An aliveness reveal without coin movement reprices only $\Delta \pi T$. A.2 through A.6 report the $\pi = 0, u = 0$ polar case and are therefore upper bounds on the unanticipated supply component of a sale.

A.8. Cross-Check: Square-Root Law—As an independent method, treat each year of a ten-year program as a metaorder of about 114,800 BTC and apply the square-root impact law $I \approx Y \cdot \sigma \cdot \sqrt{Q/V}$, which Donier and Bonart document on Bitcoin across four decades of order size.¹⁴ With annualized volatility of 45 to 60 percent and real spot volume of 5 to 20 billion USD per day, and using annual volume ($V = 365$ times daily volume) to match the annual metaorder Q , peak impact per annual metaorder is about 1.6 to 4.3 percent, of which the post-completion component, taken as roughly two-thirds of peak under the fair-pricing condition,⁴⁴ implies 1.1 to

2.8 percent per annual metaorder before allowing for later decay, overlap, or saturation across successive same-direction metaorders. A naive ten-year sum of 11 to 28 percent overstates the cumulative impact, since it ignores the near-complete long-run decay of uninformed-flow impact documented in the same study and the saturation of successive same-direction metaorders. Read as an order-of-magnitude bound, a method sharing no parameters with the elasticity arithmetic lands in the same range as A.4: single digits to the mid-twenties, with a central tendency near ten to fifteen percent. The convergence of the two methods, with the episode anchors of A.3, is why Section 3 calls the bound robust despite the lack of a calibrated elasticity.

Appendix B: The Mechanics of Provable Destruction

An `OP_RETURN` output is a transaction output whose locking script starts with the `OP_RETURN` opcode, which makes script evaluation fail unconditionally. Because the script fails whenever it is evaluated, no unlocking data of any kind can make the output spendable, so any value assigned to it is provably unspendable, and nodes drop these outputs from the UTXO set rather than carry them as spendable. Relay of transactions with one small `OP_RETURN` output was standardized in Bitcoin Core 0.9.0 in March 2014 (the comprehensive survey is Sward, Vecna and Stonedahl).^{45,46} A burn is a transaction that sends value to such an output. It needs no data payload, no special infrastructure, and no counterparty, and anyone can verify it immediately and without trust. Burning the whole Patoshi cluster would be a matter of ordinary standard transactions, differing from everyday `OP_RETURN` use, which usually attaches negligible value to a data-carrying output, only in the value sent. The formal cryptographic treatment of burn protocols, including their security properties, is in Karantias, Kiayias and Zindros.⁴⁷

Three grades of destruction should be distinguished, because they differ in verifiability even when their supply effect is identical. First, the provable burn just described: a cryptographically verifiable subtraction, effective and confirmable in one block. Second, transfers to “burn addresses” with no known private key, such as the address used in the Counterparty proof-of-burn of January 2014, the largest deliberate burn in Bitcoin’s history at slightly over 2,100 BTC: unspendable with overwhelming probability, but resting on the absence of a known key rather than on script semantics. Third, key destruction: a physically equivalent subtraction that no outsider can ever verify, since you cannot prove that no key copies exist. The ledger of Section 3.4 prices the difference. A provable burn moves the market’s residual sale probability to zero credibly and at once, delivering the full upside in one block. Key destruction, however sincere, delivers it only gradually, as the market updates on continued dormancy, and in principle never fully. A Patoshi burn would be roughly five hundred times the largest burn ever done: unprecedented in scale and mechanically trivial.

One current development is worth noting. OP_RETURN relay policy became contested in 2025, when Bitcoin Core version 30 (October 2025) raised the default data-carrier limit from 83 bytes to 100,000 bytes and allowed multiple OP_RETURN outputs per transaction,⁴⁸ prompting a visible split in node-policy preferences between Bitcoin Core and the more conservative Bitcoin Knots distribution. The dispute is about relaying *data*, not about the treatment of *value*: the consensus rule that value sent to an OP_RETURN output is unspendable has been stable since introduction and is untouched by either side of the debate. A value burn needs no data payload, so it is insulated from the controversy. The destruction option that Section 7 calls unique to Bitcoin rests on this consensus-level property, not on relay policy.



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