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From Collateral to Cash: A Legally Screened Finite-Horizon Decision Protocol

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Abstract

Recovering legal title to collateral does not guarantee that a lender will collect cash. This conceptual study combines a legal-admissibility screen with a finite-horizon selling rule that permits repeated auctions or negotiated sales when their completion windows and legal conditions fit the time remaining. Illustrative calculations distinguish conditional proceeds, attempt costs, holding outlays, completion probabilities and cash at the cutoff. With two years available, auction-first yields 54.31 index units against 53.08 for direct sale; at 1.70 years, direct sale yields 51.13 against 50.21 for auction. The reversal results from packing assumed 0.50- and 0.85-year attempt windows, not evidence of auction superiority. A separately costed rental branch yields 46.86 at a hypothetical sale-completion probability of 0.70; matching the best two-year selling policy requires approximately 0.90. An algebraic decomposition identifies when continuation outweighs direct sale's single-attempt advantage. China's historical repossessed-asset rules and Ghana's distinct default-notice, registry, valuation and realisation provisions supply conditional legal screens. The framework separates financial scheduling from legally completed disposal. No actual recoveries or causal effects are estimated.

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1. Problem, question and bounded contribution

A bank that accepts property in satisfaction of a distressed debt has solved only one part of a recovery problem. The creditor may have exchanged an uncertain loan claim for a building, but a building is not cash. Its eventual value depends on legal title, the ability to market or transfer it, the number of buyers willing to transact, the expected time to completion and what the creditor must spend meanwhile. The distinction between an accounting recovery at the time property is received and realised cash flows at final disposal is consequently a management problem rather than a question about the appraisal alone. A high booked settlement amount can coexist with prolonged vacancy and a low final net realisation.

Three broadly recognisable modes of disposition arise after a lender has validly acquired such property. One is auction or another competitive selling mechanism, which delegates price discovery to bids and may produce no sale in a given round. A second is a directly managed sale, in which the owner bears marketing and negotiation costs and may choose the sale window. A third is temporary holding with rental receipts while a later sale is pursued. This third route is not always legally feasible, and temporary rental is not equivalent to turning a lender into a permanent property company. Nor are the three paths necessarily mutually exclusive: a failed auction can

precede a negotiated sale; an authorised short-term tenant can occupy the asset until marketing succeeds. A decision model that compares only headline prices omits these transitions.

The research question is how a legally screened sequence of disposal attempts should respond to changing remaining time when each route has its own conditional settlement probability, completion duration and cash costs. Two concrete contributions follow: an auditable decomposition of the initial-route decision into single-attempt net proceeds and the value of admissible subsequent attempts, and a reproducible example demonstrating that the preferred first action need not move monotonically with the remaining horizon. The example identifies the exact attempt-duration thresholds responsible for that outcome and therefore specifies a falsifiable empirical requirement: observed completion-time distributions and failure-conditional settlement probabilities must replace the illustrative fixed durations before any operational claim can be made.

The source base is deliberately limited. The institutional illustration is a publicly issued Chinese banking rule with specified provisions. The financial reasoning comes from published scholarship, not from an invented panel of bank properties. An example later in the article is explicitly hypothetical and uses the same parameter structure for every route. This separation is necessary because public reports of property auctions, lender listings and rental intentions often do not share a cohort, legal basis or observation window.

A failed first attempt need not terminate the financial calculation. Where a further attempt is legally permitted and its completion window fits the remaining time, its net discounted value enters the continuation state; the process is repeated until there is no further schedulable action. This is conventional constrained dynamic programming rather than a newly discovered optimal-control theorem. The operational contribution is the transparent separation of what is legally allowed, what can finish within the modelled horizon, what cash is expected by that horizon, and what would remain uncollected if an attempt fails. The route-switch equation in Section 4 makes the sources of each initial preference inspectable.

2. Literature: nearest alternatives, not merely analogous theories

The liquidation literature does not portray distress discounts as a fixed percentage that can be subtracted from an appraisal in every setting. In the market-equilibrium account of **Shleifer and Vishny (1992)**, potential buyers may themselves be constrained when sellers are distressed; therefore, the willingness to pay depends partly on the availability of liquid alternative owners. **Acharya, Bharath and Srinivasan (2007)** connect industry distress and the liquidity of other industry participants to lower recoveries by defaulted creditors. For a property manager, the actionable insight is not to import their estimated magnitudes but to treat the buyer pool and transaction timing as state-dependent inputs.

Pulvino (1998) supplies a transaction-level setting where financially constrained aircraft sellers receive lower prices than unconstrained sellers in certain markets. **Pulvino (1999)** further examines the effects of different bankruptcy regimes on aircraft asset sale prices. **Coval and Stafford (2007)** find trading pressure associated with flow-induced selling and buying in equity markets. Together, these works identify mechanisms in which the same asset can command different transaction prices depending on the seller's constraint and the liquidity provision available. The assets examined are not repossessed apartments or industrial property in China. Their transfer to the present framework is conceptual: one should record the relevant constraint rather than claim that every auction produces a specific discount.

Research on housing-market selling hazards demonstrates a different source of heterogeneity. **Genesove and Mayer (1997)** show that a seller's equity position influences asking prices and time on the market. **Genesove and Mayer (2001)** associate nominal loss aversion with housing sellers' list-price choices and sale hazards. **Campbell, Giglio and Pathak (2011)** find discounts around foreclosures and other forced sales in Massachusetts and document local price spillovers. Those studies rule out a simple interpretation of asking-price revisions as pure changes in underlying asset quality. A lender's asking price may respond to policy constraints, risk of delayed liquidation, its own accounting reference point or an evolving pool of buyers.

Mayer (1995) directly models negotiated real-estate selling against auction, showing why a rapid auction can trade reduced matching time for a lower price. This is the closest comparison to the current choice of sale channels, not a study proving that auction must underperform. **Quan and Quigley (1991)** model incomplete information and costly search in real-estate price formation; their result motivates keeping appraisal, bargaining, and completion outcomes separate. **McAfee, Quan and Vincent (2002)** develop reserve-bid calculations using auction information and subsequent outcomes of unsold assets. That paper directly warns against ignoring the next-sale state after a failed auction, although its equilibrium bidding analysis is outside this limited protocol.

Chinloy, Hardin and Wu (2017) distinguish foreclosure-auction, lender-held REO and conventional residential sales, illustrating that transaction cohorts and the identity of the temporary owner affect observed prices. Djankov, Hart, McLiesh and Shleifer (2008) compare debt-enforcement time, cost and asset dispositions across countries using a standardized case; their enforcement-efficiency results are conceptually relevant but supply no Ghana-specific sale probability for the present hypothetical example. This paper consequently cannot treat a cross-country legal index as a transaction-level hazard or a price discount as a completion probability.

Private real-estate valuation adds a measurement warning. Fisher, Gatzlaff, Geltner and Haurin (2003) explain that observed transaction prices and indices vary with market liquidity. **Geltner (1993)** develops a method to infer changes in underlying market values from appraisals without imposing market efficiency. The present contribution is modest by comparison: valuation should distinguish an appraisal date and basis from executable bids, and a list of successful auction prices should not be treated as a representative sample of all properties presented for sale. Failed auctions are observations of attempted disposition, not zero-price sales.

The option literature provides a reason to model waiting without assuming that waiting is beneficial. **McDonald and Siegel (1986)** demonstrate how the option to defer an irreversible investment can have value. **Pindyck (1991)** explains why uncertainty and irreversibility alter investment rules. **Dixit (1989)** shows how entry and exit thresholds generate hysteresis under uncertainty, and **Titman (1985)** relates uncertainty to the timing of urban land development. A repossessed property is not an undeveloped land option, but its owner may choose when to incur marketing costs or commit to a price. Timing can create an option to sell later; simultaneously it generates holding charges, opportunity cost and a risk that the eventual sale price will fall. The net sign remains empirical, not theoretical.

Rental holding introduces its own distinctive valuation problem. **Grenadier (1995)** constructs a real-options approach to lease valuation, reminding us that lease terms and embedded options matter rather than gross headline rent alone. A building with a tenant may be more attractive because cash flows are visible, or less attractive when tenancy constrains possession or a buyer's intended use. The cash flow is neither a free addition to sale value nor a guaranteed receipt. Vacancy, tenant default, maintenance, tax, management charges, eventual transfer costs and legal permission must be accounted for explicitly.

Finally, the secured-credit literature suggests why asset-specific exit prices may feed back into credit decisions. **Benmelech and Bergman (2008)** analyse the role of liquidation values in financial contract renegotiation using U.S. airline leases. Their mechanism supports treating collateral realisability as a bargaining input. It does not supply a universal law of bank repossession. The existing literatures therefore answer parts of the present question—liquidity, incentives, option timing, lease economics—but leave a managerial integration problem: how to choose a permitted route when legal constraints, cash-flow timing and failed attempts are all material.

Pulvino (1999) studies commercial-aircraft transactions and reports that neither Chapter 11 reorganization nor Chapter 7 liquidation eliminates the discounts relative to nondistressed aircraft sales; no systematic higher sale price under Chapter 11 than Chapter 7 is found. Its asset type and US bankruptcy setting differ from repossessed real estate. The reference is used solely for this bounded point, not for a property-specific numeric assumption.

3. Institutional screen and evidence design

China: Cai Jin [2005] No. 53, Bank Repossessed Assets Management Measures [银行抵债资产管理办法], was issued 27 May 2005 and states an effective date of 1 July 2005 (Art. 33). Article 2 defines banks within scope, with analogous application by certain financial institutions. Article 18 prescribes disposal of immovable property/equity within two years of the specified acquisition date; Article 19 sets an auction-first norm while conditionally permitting alternative methods; Article 20 generally bars external leasing and allows a restricted exception tied to inability to dispose, loss avoidance and noninterference with disposal. The Ministry of Finance provides the archived text. This is a historically documented screen, not a claim that the same requirements bind a specific institution or acquisition in 2026. A current-law, coverage and transaction review is necessary before application.

Ghana: Act 1052 of 2020 governs the enforcement of registered security interests and the subsequent realisation or retention of collateral; this process must not be equated automatically with the management of a property that a lender already owns outright. Under §60(1), an ordinary non-perishable collateral enforcement begins with written default notice and a 30-day opportunity after the borrower's receipt to pay, arrange payment or cure the default; §60(2) provides a specific rule for perishable collateral. Section 61 lists the remedies available after the conditions of §60 are met. For the non-judicial enforcement of a registered security interest, §62(1) requires registration of the intention to realise the collateral, and §62(2) requires the Registry to certify that process by issuing a Memorandum of No Objection after its requirements are satisfied. Bank of Ghana's Rules for the Effective Implementation of Act 1052, Notice BG/GOV/SEC/2021/07, rule 15, specifies the registration and supporting-record requirements. Thus a registered security interest alone is not proof that the proposed sale can begin immediately.

Ghana's sale-stage rules are separate from its default-stage rules. Under Act 1052 §66, an independently valued collateral may be realised through auction, public tender, private sale or another route allowed under the credit agreement. Section 67(1) generally requires a further written notice to specified interested parties at least seven days before sale, subject to enumerated §67(2) exceptions. These are distinct legal clocks: an analyst must establish the actual dated evidence and permitted sequencing, not assume that the 30-day default period and seven-day sale period can be freely collapsed or simply added in every case. Sections 71–72 separately regulate lender retention and objection consequences, and §74 addresses appointment of a receiver or manager. None of these provisions alone confers a blanket post-acquisition power to lease. The May 11, 2022 Bank of Ghana enforcement-rights notice,

BG/GOV/SEC/2022/05, is cited as supervisory context for §§59–75, not as an independent source of unlimited selling or renting authority. The Ghanaian legal screen does not import China's historical two-year requirement.

Research design: no original bank-level, loan-level or property-level data have been collected. Every numerical model input is hypothetical. The decision horizon is scanned in hundredths of a year using a conventional finite-state recursion for an arbitrary number of admissible selling attempts. A second implementation independently enumerates finite action sequences to check the recursion at representative horizons. The numerical example records a cash-by-cutoff measure separately from legal completion: an unsold property is not presumed to disappear, become worthless, or satisfy a statutory disposal duty when the cutoff is reached.

4. Finite-horizon recursion and a conditional route-switch result

4.1 Cash accounting and state variables

Let $r > 0$ be an annual continuously compounded discount rate and $h \geq 0$ the monetary holding outflow per year while an attempted sale remains open. For $j \in \{A, D\}$, C_j is the cost paid upon initiating an auction or direct-sale attempt; τ_j is its full attempted-settlement window; p_j is the conditional probability of a completed cash settlement during that window; and S_j is net cash received when it completes. The remaining time before the chosen financial cutoff is T, and s denotes legal title, required notices, possession, contractual powers, and any failure-induced change in completion probability or price. In a final unsuccessful attempt, B is the cash received by the cutoff, not the residual economic or legal value of the physical property. The hypothetical baseline uses $B = 0$ only for reporting completed cash by the cutoff.

$$q_j(B) = -C_j - h[1 - exp(-r\tau_j)]/r + exp(-r\tau_j)[p_j S_j + (1 - p_j)B]. \quad (1)$$

Every new selling attempt incurs its own C_j and h throughout its settlement window, discounted from that attempt's start. In particular, repeated use of direct sale retains $\tau_D = 0.85$ years and auction retains $\tau_A = 0.50$ years; repeated attempts do not become artificially faster. Successful-sale S_j excludes only stated completion-dependent costs. A proposed operational application would need to re-estimate p_j and other inputs after an observed failure rather than automatically reuse the first-attempt assumptions.

4.2 Action eligibility and unlimited finite-horizon continuation

Let $E_j(s) = 1$ indicate that attempt j is independently legally and operationally permitted in state s, including completion of any applicable default/cure notice, registry certification, independent valuation, sale notice and possession prerequisites before the chosen attempted-sale clock starts. An action fits within the stated cutoff only when $\tau_j \leq T$, including all further legally necessary transaction and closing time not already completed. The cash-by-cutoff Bellman value $J(T, s)$ is defined over all actions that meet this test, with $J(0, s) = 0$ for financial accounting; the state remains explicitly unsold after failure unless a completed disposition occurs:

$$J(T,s) = \max\{0, \max_{j \in \{A,D\}: E_j(s)=1, \tau_j \leq T} [-C_j - h(1 - e^{-r\tau_j})/r + e^{-r\tau_j}\{p_j S_j + (1 - p_j)J(T - \tau_j, s'_j)\}]\}. \quad (2)$$

The maximization is repeated after every failed attempt. Thus, the maximum number of attempts is not set ex ante; it follows from the available time, action durations and eligibility states. The terminal zero records no cash settlement by the cutoff. It does not erase the asset, satisfy a mandatory disposal deadline, or authorize withholding a required sale. For real-life application, any path with nonzero probability of missing a legally mandatory disposal deadline must be screened for an independently lawful terminal treatment; the paper does not infer such treatment from equation (2).

$$V_j(T,s) = -C_j - h(1 - e^{-r\tau_j})/r + e^{-r\tau_j}[p_j S_j + (1 - p_j)J(T - \tau_j, s'_j)], \quad \text{if } E_j(s) = 1 \text{ and } \tau_j \leq T. \quad (3)$$

An initial policy is selected by maximizing V_j among eligible first actions. The recursion can include a third, fourth or subsequent attempt if time permits. This is a financial scheduling model conditional on legal admissibility, not a demonstration that a stochastic repeated-sale plan guarantees completed disposition before the statutory cutoff. The distinction matters most when a legal framework requires completed disposal rather than merely a timely effort to sell.

4.3 Decomposition of the initial-route choice

Define the no-continuation single-attempt value $q_j(0)$ from equation (1), and the initial-route continuation increment $F_j(T) = e^{-r\tau_j}(1 - p_j)J(T - \tau_j, s'_j)$. Holding the initial eligibility and parameter inputs fixed, the auction-first preference is exactly the difference between the continuation increments exceeding the direct route's single-attempt advantage. This is an algebraic, independently checkable decomposition, not an unexplained comparative-static assertion. Accordingly, auction-first is preferred if and only if

$$F_A(T) - F_D(T) > q_D(0) - q_A(0). \quad (4)$$

The worked example holds per-route settlement durations constant across attempts and includes all repeated launch and holding costs. Changing those assumptions, conditioning on earlier unsuccessful attempts, allowing waiting, or introducing additional legally permitted actions would change the admissible sequence and may change the observed switching points. Such extensions should be evaluated from new inputs, not inferred from the present illustration.

5. Hypothetical experiment and horizon-axis results

Table 1

Hypothetical per-attempt parameters (index units unless noted).

Parameter	Auction	Direct sale	Status
Completion p	0.45	0.60	Assumed per attempt; no calibration
Net cash on success S	70	75	Assumed index units
Attempt initiation cost C	2	4	Assumed index units, t=0 or restart
Settlement window τ	0.50 yr	0.85 yr	Same at first and second attempt
Common holding expense h	1/yr	1/yr	Continuously incurred during each sales attempt
Discount r	0.08	0.08	Continuous; same for both

The price-only benchmark ranks direct sale first because its conditional completed-sale proceeds are 75 rather than 70. A single-attempt financial measure with B=0 gives $q_A(0)$ = 27.77 and $q_D(0)$ = 37.22 index units, again favouring direct sale. The initial direct-sale advantage is 9.45 units before continuation. All inputs are constructed, and no market completion rates or national property disposal outcomes are estimated.

Table 2

Initial-route values across illustrative remaining horizons.

Remaining horizon T	If auction fails: candidate continuation	If direct sale fails: candidate continuation	Auction first V_A	Direct first V_D	Financially higher
0.90	No second action	No second action	27.77	37.22	Direct sale
1.00	A auction can repeat	No second action	42.45	37.22	Auction
1.20	A auction can repeat	No second action	42.45	37.22	Auction
1.35	D becomes schedulable	A becomes schedulable	47.44	47.60	Direct sale
1.40	D becomes schedulable	A becomes schedulable	47.44	47.60	Direct sale
1.50	A→A→A sequence possible	A after D	50.21	47.60	Auction
1.70	A→A→A sequence possible	D→D sequence possible	50.21	51.13	Direct sale
1.99	Further attempts schedulable	Further attempts schedulable	52.93	53.08	Direct sale
2.00	Up to four A attempts	D then A and A	54.31	53.08	Auction

With T=2.00 years remaining, a failed initial auction can be followed by another auction and, if needed, further actions within the available time. Full recursion gives auction-first 54.31 versus direct-sale-first 53.08: auction-first is conditionally preferred. With T=1.70, direct-sale-first gives 51.13 while auction-first gives 50.21; with T=1.20, auction-first gives 42.45 and direct-sale-first 37.22. At T=1.35, direct-sale-first narrowly leads 47.60 to 47.44. These are cash-by-cutoff financial comparisons conditional on the assumed ability to initiate further attempts, not findings that these sequences satisfy every real disposal law.

In the two-year comparison, the single-attempt direct-sale advantage is 9.45, but the auction-first continuation increment F_A is about 26.53 and the direct-first increment F_D about 15.86; their 10.67 difference exceeds that advantage and satisfies equation (4). At T=1.70, the corresponding continuation difference is about 8.52, below 9.45, so direct-first leads. An independent exhaustive enumeration of all sequences whose total durations fit the cutoff reproduces the Bellman solution for the horizons displayed in the supporting workbook.

The full time-axis sweep uses a 0.01-year numerical grid, holding τ_A=0.50 and τ_D=0.85. The route preference is not

monotonic: it changes when another full attempt can be packed into the remaining time, especially around T=1.00, 1.35, 1.50, 1.70 and 2.00 years. The appearance of a particular switch is mechanical under fixed-duration deterministic scheduling, not a new causal result about real markets. Because the model does not guarantee a completed sale by its reporting cutoff, a legally binding disposal deadline requires an additional legal-compliance screen and a documented treatment of the residual unsold asset.

5.1 Uncertainty diagnostics and complete horizon sweep

The companion workbook reports the complete financial recursion from T=0 to 2.50 in 0.01-year increments and separately contrasts it with the explicitly different case in which only two attempts are permitted. It also includes complete probability-by-exogenous-continuation-value and duration-by-exogenous-continuation-value matrices for auction and direct sale. Those diagnostic values stress the inputs; they are not substitutes for the endogenous $J(T)$ used for the principal result. All intermediate spreadsheet cells have formulas and the principal horizons were cross-checked against independent finite-sequence enumeration.

The non-monotonic preference is a discrete-duration scheduling mechanism. Its location and even its presence can be changed by the settlement-time distribution, updated completion probabilities after a failed attempt, relative costs or legal restrictions on reauctioning. A field test should therefore estimate attempt completion windows and failure-conditional transition probabilities, rather than interpret the hypothetical switching thresholds as recommended disposal dates.

6. Temporary leasing: cost symmetry and an independent legal screen

Leasing is evaluated only as a hypothetical branch in a setting where the lease, the subsequent sale and any fallback are independently lawful. Assume lease setup cost C_L=4 at t=0 and collected net rent R=2.5 at t=1, already net of holding, tenancy, taxes and operating costs during the first year. At t=1 a terminal selling attempt begins, with separate immediate marketing/launch cost C_M=2 and continuous holding expense h=1 during the ensuing 0.50-year sale window. At t=1.5 the completed-sale proceeds are S_L=70 with conditional probability p_L; failure is followed by one separately costed 0.50-year auction with $q_A(0)$=27.77, only if legally and operationally available. The end-of-lease selling costs are not embedded in R and therefore must not be omitted or charged twice.

$$V_L = -C_L + e^{-r\cdot 1}R + e^{-r\cdot 1}\{-C_M - h[1-e^{-r\cdot 0.5}]/r + e^{-r\cdot 0.5}[p_L S_L + (1-p_L)q_A(0)]\}. \quad (5)$$

With p_L=0.70, the corrected lease scenario has V_L=46.86 index units, below the best initial selling policy $J(2)$=54.31. It was higher when the terminal sale window was incorrectly treated as costless. Solving equation (5) against the FULL recursive two-year selling benchmark yields p_L^*≈0.899 (about 90%), not a threshold based on a separately capped two-attempt policy. At p_L=0.50 the lease financial value is 39.37; at p_L=0.90 it is 54.35. The threshold describes a constructed financial comparison only, not an empirically plausible probability or a legal authorization to lease.

The lease branch remains legally unresolved even where its expected cash score exceeds that of immediate selling. A tenant must not undermine the promised ability to transfer title or possession; a fallback auction after year 1.5 must also be independently permitted and able to complete by its specified financial cutoff. At any real statutory deadline, the nonzero probability of sale failure requires an identified lawful terminal treatment. An attractive modelled terminal receipt cannot serve as that treatment.

7. Ghana-specific application and managerial decision packet

Consider an entirely hypothetical Ghanaian lender with a properly registered security interest in ordinary, non-perishable property. At a dated default, the lender first documents service and receipt of the written §60 notice and the ordinary 30-day cure opportunity; a perishable-property exception must be separately justified. After the conditions for enforcement under §61 are satisfied, a lender seeking to realise registered collateral without going to court registers its intention and obtains the §62 Memorandum of No Objection upon the Registrar's satisfaction of the applicable requirements (Bank of Ghana 2021 Rules, rule 15). The lender also documents the §66 independent valuation, confirms that its contemplated route is permitted, and gives the §67 sale notice no fewer than seven days before actual sale unless an enumerated statutory exception applies. A contractual permission to sell privately does not waive the other applicable stages. This paragraph is an illustration of a documentary sequence, not a report of a particular Ghanaian loan or a claim that completion within a particular number of days is guaranteed.

Only after the relevant gates have been satisfied does the financial decision clock T begin for the present numerical example; where an obligation remains outstanding, its actual remaining time must instead be added to the attempted-settlement duration before applying $J(T,s)$. The decision packet therefore records each original event date, service proof, elapsed cure time, registry notice and certificate, valuation, sale notice, applicable exception, possession/title status, each route's probability and cash timing, repeat-attempt authority and lawful treatment if the deadline arrives without completed sale. Statutory default notice and sale notice may involve different triggers and overlapping facts; neither is silently set equal to the model's fixed 0.50-year auction or 0.85-year direct-sale window. If lender retention is contemplated, §§71–72 supply a separate notice/objection gate. After failure, the model's eligibility state must be recalculated rather than assuming all previously available legal steps remain

available. This is not a demonstration that Ghana has China's two-year disposal deadline or that enforcement confers post-acquisition rental rights.

A future evaluation would register all properties, including failed and withdrawn listings, associate all attempts with one property identifier, measure actual collected net proceeds and time, and compare the transparent policy with a price-only and a properly constrained NPV baseline on the SAME out-of-sample property cohort. Since completion probabilities can change after failure, an empirical extension must condition p on the observed state and chosen next action. Otherwise, using identical p on repeated attempts could be a severe misspecification. No out-of-sample test or recovery result is claimed by this paper.

8. Limitations and conclusions

This paper makes a conditional managerial claim rather than an empirical performance claim. Equation (4) decomposes route choice into first-attempt cash economics and endogenous continuation, while the complete horizon sweep shows a non-monotonic initial-route preference under fixed deterministic attempt durations. The mechanism is attributable to discrete action windows, not to observed auction superiority. The protocol makes the legal screen, failure state, cost dates, cutoff cash and original-source provenance explicit; those features can be tested in later property-level studies, but their impact on actual creditor recoveries is not established here.

Three limits remain important. First, the model reports expected completed cash by a chosen horizon; it cannot certify a legally required completed transfer while there is a positive probability that property remains unsold. Second, repeated-attempt probabilities and durations are held constant only to make the numerical example reproducible; an operational Ghanaian estimate must begin after verifying §60 notice, §61 remedies, §62 Registry certification, §66 valuation, §67 sale notice and all contract- and transaction-specific requirements, and then estimate failure-conditional transitions. Third, the Chinese Ministry of Finance measure is verified as a historical public rule but its application to any specific entity in 2026 is not established here. Act 1052 does not automatically confer power to lease lender-owned property following enforcement. The quantitative comparisons are therefore scenario demonstrations, not currently validated Ghanaian or Chinese implementation advice.

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Declarations

Research design and data availability. Conceptual modelling drawing only on public documents and published scholarship. No transaction-level dataset or estimate of route-specific completion probability has been collected. The public supporting workbook lists all invented scenario assumptions, derives continuation values from stated actions, and provides sensitivities and provenance. Numerical outputs are constructed and reproducible, not actual recoveries.

Generative AI involvement. Generative AI materially assisted research planning, discovery of public legal and scholarly sources, model exposition, substantive drafting, numerical checking, structural revision and language editing. The author has reviewed the described official materials, takes full responsibility for law and literature references, mathematical expressions, interpretive choices and the final submitted article. AI output is neither an original empirical observation nor a substitute for source inspection.

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